REPORT OF THE SECRETARY OF THE TREASURY ON GOVERNMENT SPONSORED ENTERPRISES

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Report of

THE SECRETARY OF THE TREASURY

on

GOVERNMENT SPONSORED ENTERPRISES

May 1990

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THE SECRETARY OF THE TREASURY
WASHINGTON

May 31, 1990

The Honorable Thomas S. Foley
Speaker of the House
House of Representatives
Washington, D.C. 20515

Dear Mr. Speaker:

Section 1404 of the Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA) (Pub. L. No. 101-73) directs the Secretary of the Treasury to assess, in two annual studies, the financial safety and soundness of the Government-sponsored enterprises (GSEs). FIRREA also directs the Secretary to study the impact of GSE operations on Federal borrowing.

Pursuant to both of these directives, I hereby submit the first annual study, which is entitled The Report of the Secretary of the Treasury on Government Sponsored Enterprises.

I am also transmitting the report to the President of the Senate.

Sincerely,

Nicholas F. Brady

THE SECRETARY OF THE TREASURY
WASHINGTON

May 31, 1990

The Honorable J. Danforth Quayle
President of the Senate
United States Senate
Washington, D.C. 20510

Dear Mr. President:

Section 1404 of the Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA) (Pub. L. No. 101-73) directs the Secretary of the Treasury to assess, in two annual studies, the financial safety and soundness of the Government-sponsored enterprises (GSEs). FIRREA also directs the Secretary to study the impact of GSE operations on Federal borrowing.

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I am also transmitting the report to the Speaker of the House of Representatives.

Sincerely,

Nicholas F. Brady

EXCERPT FROM THE FINANCIAL INSTITUTIONS REFORM RECOVERY AND ENFORCEMENT ACT OF 1989
PUBLIC LAW NO. 101-73

Section 1404: Studies of Relationships Between Public Debt and Activities of Government-sponsored Enterprises

(a) In General. In order to better manage the bonded indebtedness of the United States, the Secretary shall conduct two annual studies to assess the financial safety and soundness of the activities of all Government-sponsored enterprises and the impact of their operations on Federal borrowing.

(b) Access to Relevant Information.

(1) Information from GSE's. Each Government-sponsored enterprise shall provide full and prompt access to the Secretary to its books and records, and shall promptly provide any other information requested by the Secretary.

(2) Information from Supervisory Agencies. In conducting the studies under this section, the Secretary may request information from, or the assistance of, any Federal department or agency authorized by law to supervise the activities of any Government-sponsored enterprise.

(3) Confidentiality of Information.

(A) In General. The Secretary shall determine and maintain the confidentiality of any book, record, or information made available under this subsection in a manner generally consistent with the level of confidentiality established for the material by the Government-sponsored enterprise involved.

(B) Exemption from Public Disclosure Requirements. The Department of the Treasury shall be exempt from section 552 of title 5, United States Code, with respect to any book, record, or information made available under this subsection and determined by the Secretary to be confidential under subparagraph (A).

(C) Penalty for Unauthorized Disclosure. Any officer or employee of the Department of the Treasury shall be subject to the penalties set forth in section 1906 of title 18, United States Code, if:

(i) by virture of his employment or official position, he has possession of or access to any book, record, or information made available under this subsection and determined by the Secretary to be confidential under paragraph (A); and

(ii) he discloses the material in any manner other than:

(I) to an officer or employee of the Department of the Treasury; or

(II) pursuant to the exception set forth in such section 1906.

(c) Assessment of Risk. In assessing the financial safety and soundness of the activities of Government-sponsored enterprises, and the impact of their activities on Federal borrowing, the Secretary shall quantify the risks associated with each Government-sponsored enterprise. In quantifying such risks, the Secretary shall determine the volume and type of securities outstanding which are issued or guaranteed by each Government-sponsored enterprise, the capitalization of each Government-sponsored enterprise, and the degree of risk involved in the operations of each Government-sponsored enterprise due to factors such as credit risk, interest rate risk, management and operations risk, and business risk. The Secretary shall also report on the quality and timeliness of information currently available to the public and the Federal Government concerning the extent and nature of the activities of Government-sponsored enterprises and the financial risk associated with such activities.

(d) Reports to Congress. The Secretary shall submit to the Congress:

(1) by May 15, 1990, a report setting forth the results of the first annual study conducted under this section; and

(2) by May 15, 1991, a report setting forth the results of the second annual study conducted under this section.

(e) Definitions. For purposes of this section:

(1) Government-sponsored Enterprise. The term "Government-sponsored enterprise" means:

(A) the Federal National Mortgage Association, the Federal Home Loan Mortgage Corporation, the Federal Home Loan Bank System, the Farm Credit Banks, the Banks for Cooperatives, the Federal Agricultural Mortgage Corporation, the Student Loan Marketing Association, the College Construction Loan Insurance Association, and any of their affiliated for member institutions; and

(B) Any other Government-sponsored enterprise, as designated by the Secretary.

(2) Secretary. The term "Secretary" means the Secretary of the Treasury or his delegate.

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CHAPTER 1

INTRODUCTION

The recent failure of many federally insured savings and loan institutions, and the massive Federal funding required to resolve the thrift problem, have focused attention on other areas in which the Government may be exposed to financial risks. In this connection, section 1404 of the Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA)(Pub.L. No. 101-73) directs the Secretary of the Treasury to assess, in two annual studies, the financial safety and soundness of the Government-sponsored enterprises (GSEs). FIRREA also directs the Secretary to study the impact of GSE operations on Federal borrowing. This is the first annual study. The second will be submitted by May 15, 1991.

Government-sponsored enterprises are entities which have been established and chartered by the Federal Government to perform specific credit functions, but are now, with one exception, entirely privately owned. GSEs generally serve as financial intermediaries to facilitate the flow of credit to private borrowers in three major areas: (1) agriculture, (2) housing, and (3) higher education. They do this by raising funds in the capital markets to make or purchase loans, by issuing pass-through securities, or by guaranteeing the liabilities of others.

The market perception of Federal backing for GSEs weakens the normal relationship between the availability and cost of funds to the GSEs and the risks that these enterprises assume. The GSEs have the opportunity and even the incentive to seek greater rewards by taking more risk. Any benefits of this higher level of risk accrue to the stockholders of the GSEs and, to a greater or lesser extent, their targeted constituencies. The prospect that Congress would use taxpayer funds to prevent the failure of a GSE is perceived in the securities markets as protecting investors in GSE debt securities or GSE-guaranteed securities from loss, and providing equity investors with higher potential returns because of the greater than normal leverage some GSEs are able to assume. The asymmetry of this relationship with the Government makes it incumbent upon Congress and the Administration to scrutinize closely the financial stability of the GSEs and the risks associated with their activities. The GSEs' links to the Government listed in Table 1 give rise to the markets perception of Federal backing.

Volume and Growth of GSE Securities

While much public attention is focused on direct Treasury borrowing to finance budget deficits, much less attention has been focused on federally-assisted borrowing in the form of guaranteed loans and borrowing by GSEs. Yet, as indicated in the President's Budget for Fiscal Year 1991, off-budget borrowing under Federal auspices actually exceeded Federal borrowing to finance the budget deficits in fiscal years 1987 and 1989. Moreover, borrowing by all GSEs alone is projected to exceed Federal borrowing in fiscal 1991.

Net new funds raised by the GSEs, which include mortgage-backed security financing, have grown rapidly. Between 1980 and 1989, GSE securities outstanding grew at a 19.2 percent compounded annual rate. The swift pace increased GSE securities outstanding from $177 billion in 1980 to $863 billion in 1989 (see Table 2). Much of the increase in the GSEs' debt in the 1980s reflects dramatic expansion of Freddie Mac and Fannie Mae home mortgage financing in the credit markets through issuance of mortgage-backed securities.

GSEs Included in the Study

The GSEs examined in this first Treasury study are the:

(1) Federal National Mortgage Association (Fannie Mae), established in 1938 as a secondary market for residential mortgages;

(2) Federal Home Loan Mortgage Corporation (Freddie Mac), established in 1970 as a secondary market for residential mortgages;

(3) Federal Home Loan Bank System, created in 1932 to provide liquidity for the thrift industry;

(4) Farm Credit Banks, created in 1987 through the merger of the Federal Land Banks (created in 1916) and the Federal Intermediate Credit Banks (created in 1923);

(5) Banks for Cooperatives, created in 1933 to finance the operations of farmers' cooperatives;

(6) Farm Credit System Financial Assistance Corporation, created in 1988 to provide capital to institutions of the Farm Credit System that are experiencing financial difficulty;

(7) Federal Agricultural Mortgage Association (Farmer Mac), created in 1988 to facilitate secondary marketing of agricultural mortgages;

(8) Student Loan Marketing Association (Sallie Mae), created in 1972 as a secondary market for federally-guaranteed student loans; and

(9) College Construction Loan Insurance Association (Connie Lee), created in 1986 to insure bonds and loans to finance the construction and renovation of college facilities.

The Treasury has excluded two entities that may be classified as GSEs from this study, because they are single-purpose financing mechanisms to resolve particular problems of a Federal agency. The excluded GSEs are the Financing Corporation of the Federal Home Loan Banks and the Resolution Funding Corporation. These GSEs do not make or guarantee loans to the public, each is closely supervised by a Federal regulatory agency, and each has a statutory limit on its authority to borrow in the credit markets.

Study Approach

The Treasury used a case study approach to examine each of the GSEs according to the requirements detailed under FIRREA. Each study discusses briefly the history and development of the GSE, contains a detailed analysis of its financial safety and soundness, and discusses the timeliness and quality of information that it provides to the public and the Federal Government. The analysis of each GSE's safety and soundness focused on business risks, credit risk, interest rate risk, and management and operations risk. In addition, Treasury analyzed the level of capital each GSE maintains.

Because the primary concern of the study is the financial safety and soundness of each GSE, it focuses on issues which could result in the exposure of the Government to excessive levels of risk. No effort has been made in the study to determine whether the Congressional intent of each GSE is being met. Treasury did not conduct a cost/benefit analysis to determine if the GSEs are efficiently passing the benefits of their GSE status and the resulting credit advantages through to the targeted beneficiaries -- housing, agriculture and education.

It is important to note that Treasury did not perform an audit of any financial information or test for compliance to the GSEs' policies, procedures, or internal controls. We relied instead on the accuracy of the information presented to us by the GSEs.

The Treasury used Flow of Funds data developed by the Board of Governors of the Federal Reserve System to analyze the impact of GSE operations on Federal borrowing.

Table 1

Government–sponsored Enterprise Links to the Federal Government

Feature	Federal National Mortgage Association	Federal Home Loan Mortgage Corporation	Federal Home Loan Banks	Farm Credit System	Federal Agricultural Mortgage Corporation	Student Loan Marketing Association	College Construction Loan Insurance Association
Chartered by Act of Congress	Yes	Yes	Yes	Yes	Yes	Yes	No
Ownership	Private	Private	Private	Private	Private	Private	Federal & Private (a)
President or presidential appointees appoint some board members	Yes (5/18)	Yes (5/18)	Yes (6/14) (b)	No	Yes (5/15)	Yes (7/21)	Yes (4/11)
Treasury lending authorized	$2.25B	$2.25B	$4.0B	No (c)	$1.5B (d)	$1.0B	No
Treasury approval of debt issuance	Yes	Yes	Yes	No	No	Yes	No
Eligible for Fed open market purchases	Yes	Yes	Yes	Yes	n/a (e)	Yes	No
Use of Fed as fiscal agent	Yes	Yes	Yes	Yes	Yes	Yes	No
Eligible to collateralize public deposits (all US Government; most State & local)	Yes	Yes	Yes	Yes	Yes	Yes	No
Exempt from SEC registration (1933 Act)	Yes	Yes	Yes	Yes	No	Yes	No
Government securities for purposes of the Securities Exchange Act of 1934	Yes	Yes	Yes	Yes	No	Yes	No
Eligible for unlimited investment by national banks and State bank FR members	Yes	Yes	Yes	Yes	Yes	Yes	No
Eligible for unlimited investment by thrifts regulated by FDIC or OTS	Yes	Yes	Yes	Yes	Yes	Yes	No
Exemption of corporate earnings from Federal income tax	No	No	Yes	Yes (f)	No	No	No
Exemption of corporate earnings from State and local income tax	Yes	Yes	Yes	Yes	No	Yes	No
Exemption of interest paid from State income tax	No	No	Yes	Yes	No	Yes	No
Subject to GAO audit	Yes (g)	Yes (g)	Yes	No	Yes	No	No
Federal regulator	HUD	HUD	FHFB	FCA (h)	FCA	None	None

(a) Federally-owned stock may be sold after five years from date of incorporation.
(b) Each bank.
(c) Treasury is authorized to guarantee up to $4 billion of Financial Assistance Corporation bonds.
(d) Upon required certification from FAMC, borrowing from Treasury authorized to make payments under guarantee.

Source: Statutes and regulations pertaining to the GSEs.

(e) Entity newly created.
(f) Federal Land Banks, Farm Credit Banks and Financial Assistance Corporation.
(g) Mortgage transactions may be subject to GAO audit under rules that may be prescribed by the Comptroller General.
(h) The Farm Credit System Assistance Board also has certain powers with respect to the Financial Assistance Corporation and the System institutions needing financial assistance.

Table 2
Outstanding GSE Credit Market Borrowing

(end of calendar year, $ billions)

	1970	1975	1980	1985	1986	1987	1988	1989	Growth Rates 1970-80	Growth Rates 1980-89
Debt Issues										
Fannie Mae	15.2	30.0	55.2	93.9	93.6	97.1	105.5	116.1	13.8	8.6
Freddie Mac	****	4.1	4.6	11.8	13.4	17.5	24.8	24.1	****	20.2
FHLBanks	10.5	16.4	37.3	74.4	88.8	116.4	136.5	136.1	13.5	15.5
Farm Credit System	13.2	28.4	63.0	69.1	62.3	55.2	54.6	56.6	16.9	-1.2
Farmer Mac	****	****	****	****	****	****	****	****	****	****
Sallie Mae	****	****	****	8.6	12.2	16.5	22.0	28.6	****	****
Connie Lee	****	****	****	****	****	****	****	****	****	****
Total Issues	38.9	78.9	160.1	257.8	270.3	302.7	343.4	361.5	15.2	9.5
Mortgage Pools										
Fannie Mae	****	1.6	17.1	100.5	169.2	212.6	226.4	272.9	****	36.0
Freddie Mac	****	****	****	55.0	97.2	140.0	178.3	228.2	****	****
Total Pools	****	1.6	17.1	155.5	266.4	352.6	404.7	501.1	****	45.6
Total GSE	38.9	80.5	177.2	413.3	536.7	655.3	748.1	862.6	16.4	19.2

**** GSE not generating credit market debt as of this date.

Source: GSE balance sheets and Federal Reserve Board Flow of Funds Data.

CHAPTER 2

GUIDING PRINCIPLES AND RECOMMENDATIONS FOR GOVERNMENT-SPONSORED ENTERPRISES

Introduction

The twin objectives of any Government-sponsored enterprise should be to carry out its public purpose activity mandated by Congress, and to do so in a financially safe and sound manner in order to minimize the risk to the Federal Government. This later objective is the focus of this study, and the thrift crisis has clearly demonstrated the extraordinary cost that can result if it is not achieved.

The 1980s provided harsh lessons on the need for effective control of risk-taking by GSEs. The difficulties brought about the financial problems of the Farm Credit System and the largest Federal financial rescue in American history, resulting from the insolvency of a large part of the thrift industry, have heightened the desire on the part of policymakers to take actions in advance to minimize exposure to the risk of another costly Government rescue.

President Bush, in his FY 1991 Budget, gave recognition to the underwriting risks associated with Federal credit subsidies. He suggested that "structural reforms and better incentives for evaluating credit risk can preserve the benefits of Federal credit programs while avoiding excessive Federal risk". In light of the desire of the Administration and Congress to establish guidelines to improve the safety and soundness of GSEs and as a result of our analysis, the Treasury proposes the following guiding principles and recommendations to reduce risk to the taxpayer and to ensure the long-term solvency of GSEs.

Principle 1: A GSE Should Be Adequately Capitalized, Meet High Credit and Operational Standards, and Be Subject to Effective Government Supervision or Congress Should Terminate All Government Ties with the GSE.

GSEs are in an unusual position. While other corporations are able to diversify their operations, GSEs are mandated to serve specific credit needs in a single business area, which makes them particularly vulnerable to economic downturns in these areas. Furthermore, the financial risks inherent in institutions of this size pose a greater systemic risk that cannot be completely hedged or eliminated. A clear understanding of these risks and of the need to balance them against the importance of achieving desired public policy goals underscores the need to establish incentives for GSEs to operate in a safe and sound manner and with prudent and effective supervision.

Some GSEs are among the most thinly capitalized of major U.S. financial entities. Unlike other private sector corporations, GSEs are not subject to the usual market-imposed disciplines of increased cost or reduced access to capital as their balance sheet leverage increases beyond normally prudent levels. This is due to the market's perception of a unique and special relationship to the Federal Government. Market participants believe that, if a GSE experiences extreme financial difficulties, Congress would step in to ensure that debt holders and investors in GSE-guaranteed securities would experience no losses.

As a result of this market perception, GSEs are able to borrow in the market at rates higher than the Treasury itself pays, but significantly lower than triple-A rated corporations. In addition, they are able to employ much greater leverage in their activities; considerably higher than corporations that do not benefit from any special ties to the Federal Government. This ability to employ greater balance sheet leverage results in significantly higher returns for shareholders, when a GSE is successful, but it can result in tremendous pressure for Government assistance if a GSE encounters financial difficulty. This is similar to what happened with the Farm Credit System a few years ago and very similar to the problems of excessive risk-taking that occurred in the thrift industry.

To correct for the bias toward excessive risk in the GSEs' existing incentive structure, each GSE should be required to:

(1) have a significant amount of its own capital at risk so that it absorbs any losses first, and has a strong incentive to monitor and control its risks;

(2) meet high credit and operations standards; and

(3) be subject to effective Federal supervision.

If these conditions are not met by a GSE, Congress should sever that GSE's ties with the Government.

Principle 2: A Private Market Mechanism Should Be Used to Evaluate GSE Risk.

While each of the GSEs was authorized by Congress for a specific public purpose and to serve a specific constituency, each operates as a private corporation with shareholders. Over the years, the GSEs have grappled with how best to reconcile the often opposing goals of fulfilling their federally mandated public purpose and delivering the financial returns expected by shareholders.

As discussed earlier, the GSEs are not subject to all of the usual market forces that impact the activities of other corporations. The GSEs' shareholders and, to some extent, the intended beneficiaries have gained from this arrangement. Shareholders have received greater returns on equity in part because GSEs have been able to operate with much greater leverage than other corporations. Targeted constituencies have also benefited because the lack of normal market restraints has allowed GSEs to expand their programs dramatically and to offer financing at reduced costs.

After careful review of the capital adequacy and other management and financial factors essential to safety and soundness, the Treasury has determined that no single capital adequacy test or standard can or should apply to all GSEs, due to the diversity and complexity of their operations. For example, forcing compliance of each GSE with the risk-based capital standards for commercial banks or thrifts would not be sensible. While the amount of equity capital is an essential element of safety and soundness, it is not the only one; other important factors need to be taken into account as well.

The private sector turns to private credit rating agencies when faced with a need to measure and monitor the risks of complex and broadly different commercial entities. These agencies are able to focus on the full range of factors that affect creditworthiness, not just capital adequacy. We believe that the approach used to evaluate and monitor risks in private markets can and should be used to evaluate GSE risk. This approach provides a superior method for evaluating risk than a reliance on a single capital adequacy standard.

Toward this end, the Treasury recommends that GSEs be required to obtain a rating equivalent to triple-A, absent any implicit Government guarantee, from at least two of the nationally recognized credit rating agencies. Each GSE would be required to obtain a rating shortly after enactment of legislation incorporating these recommendations. Should a GSE be rated below triple-A, it would be required to submit, and adhere to, an acceptable business plan describing the actions it plans to take to achieve a triple-A rating within five years from the date of enactment of the legislation, or lose its ties to the Federal Government.

Treasury is convinced that a triple-A rating is appropriate because it represents the most safe and sound level of credit quality, and thereby the best protection from potential risk. It should be noted that requiring this high credit standard should not increase the borrowing costs of any GSE, nor would it significantly impair the ability of GSEs to fulfill their public purpose. In fact, requiring a triple-A rating would only reduce the potential need for another Federal rescue.

Principle 3: The Program Regulator Should Be Different from the Implementer of Financial Safety and Soundness Standards.

Treasury recommends that the regulatory authority which monitors a GSE's fulfillment of its Congressional mandate should be different from the entity implementing financial safety and soundness standards. Separating these two regulatory functions will minimize risk to the taxpayers by removing a perceived or actual regulatory conflict of interest. That is why FIRREA divided the thrift regulator's chartering and chief supervisor functions from its insurance function, assigning the former to the Office of Thrift Supervision and the latter to the FDIC.

The Treasury recommends that the current program regulator continue to be responsible for ensuring that the GSE meets its Congressional mandate by effectively serving its intended beneficiaries. For example, the Department of Housing and Urban Development would continue to exercise specific and general regulatory oversight over housing related GSEs, including new program approval, and provide assurance that they meet their obligation to provide ongoing assistance to the secondary market for home mortgages for low- and moderate-income families.

The Treasury recommends that issues related to financial safety and soundness be dealt with by a different Federal entity, one that would ensure that the GSE meets the requirements for a triple-A rating. In the event a GSE is not rated triple-A, this entity would certify a business plan designed to achieve the required credit rating and monitor adherence to the plan.

If the business plan were not adhered to, the safety and soundness implementer would be authorized to impose sanctions that include limiting GSE growth, establishing additional financial constraints (such as dividend restrictions or reduced financial leverage), and withdrawing certain benefits of Government sponsorship (such as SEC exemption, Federal charter, use of its obligations as Federal deposit collateral, and unlimited investment in its obligations by depository institutions).

Principle 4: The Value of the Government's Financial Support Should Be Disclosed.

The use of the credit rating agencies will provide important data for estimating the size of the implicit Federal subsidy available to each GSE. For example, if a GSE were rated single-A absent a Government guarantee, the interest rate portion of the subsidy would be the difference between the interest rate at which single-A rated corporations can borrow in the market, and the interest rate the GSE pays. Even after each GSE attained triple-A status, a significant credit subsidy not enjoyed by private sector competitors would still remain. GSEs enjoy other financial advantages as well, but these do not all lend themselves as readily to calculation, nor is their magnitude of effect comparable.

Congress and the public should be aware of the size of the subsidy, as well as all the other advantages GSEs receive, to be better able to analyze the true costs of GSE programs compared to the benefits the targeted beneficiaries actually receive. The Administration recommends the amount of subsidy that results from a GSE's enhanced borrowing status be disclosed annually as a part of the President's budget.

Conclusion

The guiding principles and recommendations that the Treasury has proposed will assist the Government in managing its responsibility to ensure that the GSEs meet their Congressional mandates in a safe and sound manner. The Treasury believes that the steps outlined here will enhance safety and minimize risk to taxpayers, while maintaining the GSEs' ability to efficiently and effectively serve America's special credit needs.

IMPACT OF GSE OPERATIONS ON FEDERAL BORROWING

-- The financing activities of the GSEs have grown far more rapidly than either Treasury borrowing from the public or total funds raised by all sectors of the economy.

-- From 1980 through 1989, GSE obligations grew at a 19.2 percent compounded annual rate, reflecting in large part Fannie Mae and Freddie Mac pass-through securities which increased at a phenomenal 45.6 percent compounded annual rate.

-- Although conceptually such a magnitude of borrowing should increase the cost of Treasury financing, all things being equal, the available evidence does not show that GSE borrowing has had such a direct effect. This appears to be due to the inability to separate out the significant impact of major macroeconomic trends.

-- In the 1980s other factors intervened to offset any potential upward pressures on Treasury yields from GSE activity.

-- Treasury yields declined in spite of rapid growth in net new GSE credit market borrowing.

FEDERAL NATIONAL MORTGAGE ASSOCIATION

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Summary

-- Fannie Mae provides a link between capital markets and home buyers. It has $111 billion in mortgages and $228 billion of mortgage-backed securities (MBS) outstanding. The primary risks it faces are credit and interest rate risk on its portfolio and credit risk on its MBS. An appropriate capital standard should provide a buffer against adverse economic conditions and an incentive to manage risks prudently.

Business Risk

-- In the 1980s, Fannie Mae benefitted from the entrance of the "baby boom" generation to the first-time buyer market, inflation (which increased homeowner equity), and the growth of the mortgage securitization industry. An expected slowing of all three factors in the 1990s augurs for a reduction in Fannie Mae's overall growth and may expose it more to the fluctuations of the business cycle.

Credit Risk

-- Fannie Mae's serious delinquency and in foreclosure rates have significantly improved since revision of underwriting standards in 1985, but remain well above Freddie Mac's.

-- Fannie Mae's biggest credit risk is a regional or national economic slowdown. About 50 percent of its outstanding mortgages are concentrated in five states. And its charter requires it to maintain a presence in the market at all times.

Interest Rate Risk

-- After heavy losses in the early 1980s, Fannie Mae has developed a strategy of trying to insulate its earnings from changes in interest rates. More recently, it has tried to match its interest rate sensitivities over a wider range of interest rates.

-- Under mark-to-market analysis, for large interest rate increases (300 basis points), net market value of Fannie Mae's portfolio and mortgage financing turns negative. For even larger interest rate changes (400-500 basis points), Fannie Mae's net worth becomes negative.

Management and Operations Risk

-- Fannie Mae's documentation of procedures and models and its ability to use its new MIS system effectively need improvement.

Capital

-- The HUD ratio requirement is not an appropriate measure of overall capital adequacy since it does not take into account off-balance sheet MBS outstanding.

-- Financial institution risk-based capital requirements do factor in off-balance sheet liabilities. However, these measures are not an appropriate capital test in their present form for Fannie Mae because it has national diversification, almost unrestricted access to capital markets, concentration of assets in home mortgage loans, and substantial guarantee fee income.

-- Treasury does not consider the current leverage an imminent threat, but additional capital is necessary.

-- The Fannie Mae credit stress test model is very sensitive to critical loss assumptions related to its Texas experience. When run with alternative but not unreasonable assumptions, the impact is to cause current capital levels to be seriously depleted.

-- By Fannie Mae's own analysis, its optimal capital level as of the end of 1989 was $1 billion higher than the actual level. Fannie Mae plans to raise $2 to $2.5 billion of capital by the end of 1991 chiefly through retained earnings and growth in loan loss reserves.

-- An appropriate capital standard for Fannie Mae should both ensure an adequate capital buffer against adverse economic conditions and provide management incentives to manage prudently the risks the corporation undertakes.

Quality and Timeliness of Information

-- Fannie Mae should consider releasing a quarterly mark-to-market balance sheet, including income from off-balance sheet MBS, in order to enable outsiders to make comparisons of market value over time as a way of assessing interest rate risk.

-- Fannie Mae's reports adequately disclose its financial and operational statistics in a timely manner. However, additional risk-related information on the characteristics of mortgages, such as LTV ratios, should be made available to the public.

FEDERAL HOME LOAN MORTGAGE CORPORATION

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Summary
-- Freddie Mac provides a link between capital markets and home buyers. At year-end 1989, it had $273 billion in pass-through securities and $22 billion in its portfolio. The primary risks it faces are credit risk on its pass-throughs and credit and interest rate risk on its portfolio. An appropriate capital standard should provide a buffer against adverse economic conditions and an incentive to manage risks prudently.

Business Risk
-- The rapid growth in mortgage securitization has effectively insulated Freddie Mac from the cyclical fluctuations in the housing and primary mortgage markets in the last decade.

-- A change in demographics and a growing maturation of the mortgage securitization industry is expected to result in slower growth for Freddie Mac in the 1990s. Housing price inflation is also expected to slow in the coming decade.

Credit Risk
-- Freddie Mac manages its credit risk through the application and monitoring of adherence to its underwriting and seller/servicer standards.

-- Historically, Freddie Mac's mortgage delinquency and foreclosure experience has been consistently superior to Fannie Mae and the mortgage banking industry.

-- Based on Freddie Mac's Great Depression stress test, the credit risk performance of its purchased mortgages has improved for three straight years. Recent housing price inflation has benefitted Freddie Mac considerably; the large amount of mortgages purchased since 1985 have decreased risk characteristics because of rapid seasoning (an inflationary buildup in homeowners' equity). Nevertheless, the stress test is highly dependent on Freddie Mac's own estimated loan to market value of its portfolio. ARM default and repayment estimates need to be better modeled.

Interest Rate Risk
-- Freddie Mac's exposure to interest rate risk is small, since it currently has a policy of securitizing 95 percent of its purchases. Securitization transfers interest rate risk to the holders of the MBS.

-- Freddie Mac measures its interest rate risk by examining how the corporation's market value changes when interest rates change. Even for large interest rate changes, Freddie Mac's net market value remains positive.

Management and Operations Risk

-- Freddie Mac works with a clear definition of management and operations risk. The controls, monitoring, and information systems used by Freddie Mac are adequate.

Capital

-- Freddie Mac's current degree of leverage does not pose an imminent threat. However, because of the lack of a capital standard that is tied to the risks that it undertakes, Treasury is concerned about Freddie Mac's capital adequacy in the long run.

-- The HUD ratio requirement is an inadequate test of capital adequacy as it omits off-balance sheet activity. Risk-based capital requirements for commercial banks and thrifts are not appropriate in their present form because Freddie Mac has national diversification, almost unrestricted access to capital markets, concentration of assets in home mortgage loans, and substantial guarantee fee income.

-- An appropriate capital standard for Freddie Mac should provide incentives for prudent risk management as well as ensure an adequate capital buffer against adversity.

-- A new constituency of public stockholders may pressure Freddie Mac to undertake more risk-taking.

Quality and Timeliness of Information

-- Freddie Mac is the only GSE to make public its quarterly mark-to-market balance sheet including income from off-balance sheet securities. Comparison of market values over time enables outsiders to assess Freddie Mac's exposure to interest rate risk more effectively.

-- Freddie Mac's reports adequately disclose its financial and operational statistics in a timely manner. However, additional risk-related information on the characteristics of mortgages, such as LTV ratios, should be made available to the public.

FEDERAL HOME LOAN BANKS

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Summary

-- The Federal Home Loan Banks (Banks) are conservative, well-managed institutions that have posed little risk to the Federal Government. However, because of recent changes in the thrift industry, the Banks are now operating in a new environment.

Business Risk

-- Perhaps the major challenge for the Banks over the next few years will be handling the problems associated with a declining membership and declining demand for advances due to the contraction of the thrift industry. The Bank System's earnings could decline.

-- Therefore, to increase their earnings, the Banks should aggressively market advances in order to increase the borrowing of their current membership as well as to attract new members. FIRREA broadened the Bank System's potential membership base to include eligible commercial banks and credit unions.

Credit Risk

-- The Bank System has very successfully controlled credit risk; it has never suffered a loss on an advance. The Banks protect against credit risk through credit underwriting and conservative collateral requirements.

-- The Bank System's outstanding advances to troubled and insolvent thrifts are a potential concern. Because the Banks have not incurred losses in the past and their credit policies appear to protect against future losses, their external auditors have not required the Banks to establish loan loss reserves. However, the Federal Housing Finance Board (FHFB) should evaluate the potential loss exposure in each Bank and consider the benefits of requiring a loan loss reserve.

Interest Rate Risk

-- The Banks have effectively managed their interest rate risk as demonstrated by the relatively small variance in the Bank System's net interest margin over the past 10 years.

-- The maturity gap analysis that some Banks use does not provide the same level of interest rate risk information as duration analysis. The Banks should consider using duration analysis.

Management and Operations Risk
-- The Banks successfully control management and operating risk through an organized planning and policy-making process. In addition, appropriate MIS exist to generate accurate documentation.

Capital
-- The Banks are currently well-capitalized, with an aggregate capital to total assets ratio of approximately 8 percent; it would probably be considerably higher if measured on a risk-adjusted basis. To ensure all Banks maintain capital which fully reflects the risk of their activities, a minimum standard may need to be established.

-- The Banks' level of capital stock could fall as insolvent thrifts are resolved and their capital stock in the Banks is redeemed. However, the current maximum 12 to 1 aggregate ratio of consolidated debt to capital appears to ensure that the Banks will remain adequately capitalized.

-- The FHFB should consider the benefits of establishing a dividend policy that will encourage the rebuilding of the Bank System's retained earnings. (The Banks, however, might be concerned that such retained earnings could be used to help meet future thrift losses.)

Quality and Timeliness of Information
-- The FHFB and the public receive accurate and frequently updated information.

THE FARM CREDIT SYSTEM

SUMMARY OF CONCLUSIONS AND RECOMMENDATION

Summary

-- The government bailout of the Farm Credit System (System) illustrates very clearly the real risks and real costs associated with government sponsored enterprises. Although the System has taken steps to improve its risk management, significant risks remain.

Business Risk

-- The System is limited to investing in a single business sector. The volatility of the agricultural sector makes the risks associated with this limitation even more significant.

-- The System's more diversified competitors, primarily commercial banks, have been gaining market share at the System's expense; their is no reason to believe that this trend will not continue. The System appears to compete on the grounds of funding availability and experience.

-- The System should develop an overall plan for remaining competitive in the future to include the continued consolidation of System institutions, as well as other steps for reducing expenses.

Credit Risk

-- Because of its single sector restriction, the System has some inherent credit risk. The System is also continuing to resolve credit problems experienced in the 1980s.

-- While System institutions have made great strides in implementing strict underwriting standards, differential loan pricing, and other credit operation improvements, such implementation has been inconsistent.

-- The System must develop Systemwide standards, binding at all levels, including procedures for the district FCBs to control the risks inherent in the associations' direct lending authority.

Interest Rate Risk

-- A major part of the System's difficulties in the 1980s resulted from severe interest rate risk exposure, given that most loans are long-term real estate loans. System institutions significantly improved their management of this risk, but need to do better.

-- All System banks must reach an acceptable level of sophistication in managing interest rate risk. Therefore, the Funding Corporation should continue to develop its Market Access Risk Alert Program (MARAP), and encourage more consistent practices across the System. Use of marginal cost pricing must also be monitored.

-- Finally, the System's variable rate loan product is administered by the management and boards of System banks. Unless the repricing of these loans is tied firmly to indices they will remain a potential source of interest rate risk exposure.

Management and Operations Risk

-- Some System institutions are exposed to risks associated with a lack of board oversight, ineffective internal audit functions, the lack of control skills at some newly established Agriculture Credit Associations, and inadequate MIS. We recommend that the System take steps to address these problems.

Capital Adequacy

-- The FCA is implementing risk-based capital standards, but the 7% standard may not be completely adequate.

-- The System's "at-risk" borrower stock, a major component of the System's permanent capital, may not be truly at risk.

-- The joint and several liability mechanism, intended to protect investors holding System debt, was not triggered in 1987 in favor of Government assistance, although funds existed in the System.

-- Although the Insurance Fund was created to provide pooled funds to troubled System institutions, these funds will not be accessible until 1993.

-- The System must therefore build up retained earnings to provide a dependable source of protection against System losses.

Quality and Timeliness of Information

-- System institutions provide reports and information as required in a timely fashion. This information generally forms a credible basis for analysis.

FEDERAL AGRICULTURAL MORTGAGE CORPORATION

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Summary

-- The Federal Agricultural Mortgage Corporation has not yet begun its guarantee program, and currently poses no risk to the Federal Government. Once operational, it is likely to be exposed to substantial business risk, due to its charter limitations. Farmer Mac may expose itself to the risk of losses substantially in excess of the reserve/subordinated interest required of program participants, depending upon the degree to which it waives its underwriting standards. Capital standards adequate for protection of Farmer Mac should address the unique nature of the risks of its operations. Farmer Mac should build adequate levels of reserves and retained earnings from guarantee fees as soon as guarantee program operations begin.

Business Risk

-- Farmer Mac is exposed to substantial near term business risk from initial unfamiliarity with its program and the potentially costly regulatory capital requirements for likely participants.

-- Over the long term the program will most likely mirror the volatility historically associated with agricultural credit demand.

Credit Risk

-- Farmer Mac's underwriting and pool diversification standards appear to provide substantial protection from credit risk.

-- Extensive use of its ability to waive its underwriting standards, current inability to audit poolers, and reliance on its flawed stress test procedure as protection against losses from default may expose Farmer Mac to significant credit risk.

-- The decision to charge the same guarantee fee for all mortgage pools subjects Farmer Mac to a potential "adverse selection" bias; loan pools of only marginal credit quality might result.

Interest Rate Risk

-- Farmer Mac is not affected by the interest rate risk of the MBS it guarantees. Only modest residual levels of interest rate risk remain, from fluctuations in originations, pool generations, and repayments.

Management and Operations Risk

-- Although it is making plans for further development, Farmer Mac has established only elementary policies and procedures for control of management and operations risk.

-- If the needed management and operating controls are not in place by the commencement of full-scale operations, Farmer Mac will expose itself to considerable risk.

Capital
-- Because of similarities between Farmer Mac's operations and those of bond insurers, the comprehensive risk analysis used by financial institution/structured finance rating agencies may be the most appropriate procedure to set capital adequacy standards for Farmer Mac.

Quality and Timeliness of Information
-- The extent and timeliness of the information submitted by Farmer Mac appears to form a basis for credible analysis of its limited activities to date.

STUDENT LOAN MARKETING ASSOCIATION

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Summary
-- Sallie Mae is a profitable, well-managed GSE, for which credit risk entailed in hedging activity is the major source of risk exposure.

Business Risk
--Sallie Mae is not exposed to a large degree of business risk. The expected reduction in the college age group could affect Sallie Mae's ability to expand its asset base and therefore its profits.

Credit Risk
-- Sallie Mae is essentially not exposed to credit risk on its fully federally guaranteed or reinsured student loan portfolio. It has not suffered, to date, significant losses as a result of the unsecured nature of its interest rate and foreign currency swap transactions.

-- Nevertheless, Sallie Mae should require collateral in swap transactions sufficient to cover its credit risk exposure.

-- Sallie Mae is developing formal credit risk assessment standards that will improve its ability to assess the credit quality of its counterparties.

Interest Rate Risk
-- Most of Sallie Mae's assets and liabilities have a short interest rate reset. Most assets and liabilities are closely matched. As a result, Sallie Mae is not exposed to a great degree of interest rate risk.

-- Sallie Mae's net interest margin has been declining for the last five years. This is due more to an increase in leverage than changes in interest rates and has not had a material adverse impact.

Management and Operations Risk
-- Sallie Mae has adequate controls to manage and monitor its operations. Nevertheless, explicit credit standards should be developed for counterparties to swap and other transactions.

Capital
-- Sallie Mae's management intends to maximize return on equity and shareholder values. To that end, it has been repurchasing its common stock from its strong retained earnings.

-- Sallie Mae has a strong capital base, added to annually by its increasing retained earnings. Sallie Mae does not need to increase its capital at this time.

-- However, Sallie Mae's capital adequacy should remain under scrutiny by the Congress and the Executive Branch as it has no Federal regulator.

Quality and Timeliness of Information

-- In order to inform investors more thoroughly of the risks involved in Sallie Mae's business operations, Sallie Mae should publish more information regarding its swap activity and policies for assuring the creditworthiness of its counterparties in all types of business transactions.

-- Sallie Mae's information reporting is timely.

COLLEGE CONSTRUCTION LOAN INSURANCE ASSOCIATION

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Summary

-- During its first year as a reinsurer of academic facilities bonds, Connie Lee managed its business, credit, interest rate, and management and operations risks well and appears to be a financially safe and sound corporation. In keeping with its Congressional mandate, Connie Lee will enter the primary insurance business in 1990.

-- Treasury experienced great difficulty in obtaining necessary information from Connie Lee during the study period. While the level of cooperation from Connie Lee recently improved, Treasury will keep Congress informed as to its progress in securing information from the corporation during the second study.

Business Risk

-- Connie Lee will face greater competition when it becomes a primary insurer. By developing its expertise and contacts in the sectors to which it is limited by Federal statute, Connie Lee intends to establish a secure niche for itself in the market for bond insurance. Evaluation of its potential success is premature.

Credit Risk

-- The most important risk facing Connie Lee is credit risk, since once the insurance is contracted Connie Lee cannot cancel the policy or adjust the premium.

-- As it moves into the primary insurance business and takes on higher exposure, Connie Lee should establish a more formalized system of underwriting procedures in order to ensure that its credit analysts assess credit risk in accordance with its Board-approved underwriting criteria.

-- Connie Lee's current subjective credit rating system should be quantified and adherence to the underwriting policies and procedures which it has established should be documented via an internal audit function.

-- Connie Lee should establish an information system to track its higher risk exposure as a primary insurer.

-- Connie Lee's external auditors should be asked to review the corporation's underwriting policies and procedures and include their findings in their audit report on Connie Lee.

Interest Rate Risk

-- Connie Lee faces little interest rate risk, since it has no outstanding debt and has no plans to issue debt.

Management and Operations Risk
-- Connie Lee has established the controls, monitoring, and information systems necessary to monitor its management and operations risks for its present reinsurance business.

-- The corporation will need to develop more fully its current control systems as its business volume in primary insurance grows.

-- Internal deficiency reports documenting any lack of adherence to Connie Lee's policies and procedures should be required.

Capital
-- Connie Lee must meet Wisconsin regulations with regard to contingency reserves, minimum capital, and a maximum exposure. It must also pass the S&P stress test with higher capital sufficiency than S&P would require other bond insurers to have because of the narrow focus of its business and the statutory requirement to insure only medium credit quality, academic facilities bonds.

-- As a reinsurer, Connie Lee has adequate capital. But before receiving a triple A rating as a primary insurer, it must raise $60-$70 million in additional capital to demonstrate sufficient claims-paying ability.

Quality and Timeliness of Information
-- Connie Lee's reports adequately disclose its financial and operational statistics in a timely manner, but do not provide sufficient information concerning the overall risks posed by its operations.

General Recommendations
-- The Secretary of Education should sell his $19.1 million holdings of Connie Lee stock in February 1992 when he is authorized to do so. As provided in Connie Lee's authorizing statute, Sallie Mae would be given the right of first refusal on the sale of such stock.

-- Until the Secretary of Education's stock holdings are sold, Connie Lee's receipts and outlays should be included in the Federal Budget in accordance with existing budget scoring rules applicable to Government-sponsored enterprises.

-- The Federal Government, despite its investment in Connie Lee, has no effective oversight over its activities. The Federal Government's appointment of four directors to Connie Lee's Board and the annual reporting requirements which it has placed on Connie Lee are the only areas where the Government has a degree of oversight responsibility. The Government needs to monitor more closely than it does now the risks which Connie Lee is facing in its operations.

CHAPTER 3

IMPACT OF GSE OPERATIONS ON FEDERAL BORROWING

Net new borrowing of the Government sponsored enterprises (GSEs), which includes mortgage-backed security financing,[1] has grown far more rapidly than Treasury debt held by the public.[2] Between 1980 and 1989, GSE obligations grew at a 19.2 percent compounded annual rate, compared with compounded growth rates of 13.2 percent in Treasury public debt securities and 11.5 percent in total funds raised by all sectors. The rapid growth increased GSE debt from $177.1 billion in 1980 to $862.6 billion in 1989 (see Table 1).

In the 1980s, net new GSE borrowing was dominated by funds raised through Federal National Mortgage Association (Fannie Mae) and Federal Home Loan Mortgage Corporation (Freddie Mac) mortgage-backed pass-through securities (see Chart 1). The pass-through programs transformed whole mortgages into market instruments that competed directly with other marketable debt. The programs evolved to improve home-owner access to loanable funds under all market conditions. Since the mortgage financing activity that underlies mortgage-backed securities issuance is highly interest-rate sensitive, changes in net new GSE borrowing activity have tended to be inversely related to changes in mortgage interest rates (see Chart 2).

One might expect the GSE financing activities to raise the cost of Federal borrowing. Given their close, favored relationship with the U.S. Government, the GSEs generate credit market instruments that for market participants are relatively close substitutes for Treasury securities. Depending on the degree of substitutability, increases in the supply of GSE obligations potentially could raise the cost of Treasury borrowing.

The available statistical evidence does not show that GSE borrowing has had a direct effect on the cost of Federal borrowing. Major macroeconomic trends that cannot be separated from the impact of GSE financing activities offset any potential upward pressures on Federal borrowing costs from GSE activity. The offsetting factors included declines in inflationary expectations, acceleration of foreign investment in the U.S., and declines in credit demands by sectors other than GSEs.

GSE Proportion of Total Borrowing

Net new borrowing by GSEs consistently tracked total funds raised in the mid-to-late 1980s, unlike in previous years, when the relationship was less pronounced.[3] GSE borrowing and total funds raised escalated in 1984 and 1985 and peaked in 1986, when GSE borrowing had reached $123.4 billion and total funds raised had reached $1,306.2 billion. They both declined during 1987 and 1988, but each posted a moderate increase in 1989 (see Table 2 and Chart 3).

Enormous growth in Fannie Mae and Freddie Mac mortgage pools has increased GSE borrowing through mortgage-backed securities relative to total GSE borrowing (see Chart 1). The preponderance of mortgage-backed securities has forged close direct relationships between total GSE borrowing and mortgages and between GSE borrowing and total funds raised. Fannie Mae and Freddie Mac mortgage pools, which accounted for 2.8 percent of total funds raised in the first half of the 1980s, posted a 7.4 percent share in the last half and 10.3 percent in 1989 (see Table 3).

In 1989, the direct relationship between GSE net new borrowing and mortgage borrowing failed to hold, at least temporarily. Mortgage yields rose and the rate of increase in mortgage credit declined, but net additions to Fannie Mae and Freddie Mac mortgage pools increased by more than enough to offset a decline in GSE borrowing through other means. The breakdown in the relationship reflects structural changes.

The savings and loan industry went through a major restructuring brought about by the events leading up to the enactment of the Financial Institutions Reform, Recovery and Enforcement Act of 1989 (FIRREA) and shrinkage of the industry since FIRREA was enacted. This restructuring, in part, was characterized by conversions of a large volume of whole mortgage loans into GSE mortgage-backed securities in 1989 when overall mortgage credit was declining. In addition, recently adopted risk-based capital requirements for financial institutions encourage the securitization of mortgages. Financial institutions holding whole mortgages find it beneficial to shift to mortgage-backed securities issued by GSEs, which are subject to a lower capital charge than are whole mortgages.

GSE Borrowing Offset Declines in Treasury Borrowing

Treasury borrowing from the public continued to exceed GSE borrowing in the second half of the 1980s, but the GSEs' share of total funds raised by all sectors increased relative to the Treasury's share (see Chart 4). After dropping in 1983 from its

1982 peak, the Treasury's share of total funds raised fell until it posted slight increases in 1988 and 1989. The doubling in the GSEs' share of total funds raised to 12.3 percent in 1989 from 6.0 percent in the first half of the 1980s reflected rapid growth (45.6 percent compounded annually) in Fannie Mae and Freddie Mac mortgage-backed securities.

GSE Borrowing Related to Interest Rates and Mortgage Credit

GSE borrowing bore a loose inverse relationship to mortgage yields for most of the 1980s. Declines in interest rates that encourage home purchases and fixed-rate mortgage refinancings led to increased mortgage securitization, and thus to greater Fannie Mae and Freddie Mac financing activities. In 1989, however, legislative and regulatory changes discussed above interrupted the inverse relationship between GSE borrowing and mortgage interest rates. Although mortgage interest rates increased and total mortgage lending declined, funds raised by GSEs increased.

Chart 2 shows other inconsistencies in the inverse relationship between GSE borrowing and mortgage yields. New business generated after the introduction in 1981 of Fannie Mae mortgage-backed securities and consumer expectations regarding the future course of mortgage rates have contributed to these shorter-term departures from trend.

Time lags have also obscured year-to-year observations of the relationship. Homeowners typically wait to refinance fixed-rate mortgages until rates have fallen enough to justify the cost of doing so. Such waiting can cause a bunching, or unevenness, in mortgage origination and securitization. For example, a decline of over 280 basis points in the mortgage rate over the two years ended in 1986 was associated with an explosion in GSE borrowing through mortgage-backed securities in 1986. During the following year, the rate of increase in mortgage-backed securities declined in spite of a further 55 basis point drop in mortgage rates.

Relationship of GSE Borrowing Rates and Treasury Rates

As a measure of investor return demanded on debt that is free of default risk, yields on Treasury securities are the benchmarks against which all GSE securities, as well as securities of other issuers, are priced. Variation in the difference (or spread) between agency yields and Treasury yields is a function of supply and demand conditions.

In the 1980s, when Fannie Mae and Freddie Mac secondary mortgage market activity became well established, large increases in funds raised by the GSEs coincided with increases in the spread of 10-year GSE yields above 10-year Treasury yields in all but one year (see Chart 5).[4] While the data show that the spread increased with advances in GSE borrowing, it provides no information on pressures on Treasury borrowing exerted by GSE borrowing.

Impact of GSE Borrowing on Treasury Borrowing

In the competitive U.S. credit markets, prevailing market yields on U.S. Treasury securities are the best indicators of any pressures in the Treasury securities market, including pressures arising from GSE borrowing. Relying solely on observed changes in Treasury yields to indicate pressures from GSE borrowing, however, raises serious problems. The chief pitfall is that prevailing Treasury yields are affected by many other variables, including overall macroeconomic trends.

Several factors have contributed substantially to declines in Treasury yields during the 1980s. The rate of inflation in the CPI peaked at 13.3 percent in 1979 and proceeded to fall to a low of 1.1 percent in 1986 before accelerating to 4.6 percent in 1989. Foreign investment in the U.S. increased sharply during the last decade. On a national product account basis, the foreigners' share of the available saving pool in the U.S. increased from .2 percent in 1982 to 18.5 percent in 1987 and then fell to 10.7 percent in 1989. Net Treasury borrowing from the public peaked at $223.6 billion in 1985 and then declined steadily until it rose to $150 billion in 1989 from $140 billion in 1988.

The laws of supply and demand suggest that, other things remaining equal, the increases in GSE debt over the past decade should have increased the cost of Treasury borrowing. In the very dynamic world of the 1980s, however, the "all other things remaining equal" condition did not prevail, and neither did a simple, positive relationship between Treasury yields and the ratio of GSE borrowing to Treasury borrowing. On balance, the inverse variation of GSE borrowing with changes in interest rates has helped to obscure any upward pressures that increased GSE borrowing, or its increase relative to Treasury borrowing, might have put on Treasury yields.

Chart 6 shows that GSE borrowing is inversely associated with movements in Treasury yields, or that on balance, the escalating debts of the GSEs in the 1980s did not push Treasury 10-year yields higher. Any upward pressures on the absolute level of Treasury yields exerted by GSE borrowing were more than offset by other factors.

When cyclical and inflationary pressures ease, both Treasury yields and mortgage rates fall. Lower rates encourage growth in mortgage debt and mortgage refinancings, which tend to trigger accelerations in Fannie Mae and Freddie Mac borrowing through mortgage-backed securities. These accelerations raise the aggregate of new GSE borrowing during periods of falling yields.

Results Obtained by Other Researchers

Using theoretical models, researchers have hypothesized that pressures from GSE borrowing impact the cost of Treasury borrowing.[5] In general, however, empirical research has found only weak statistical relationships between changes in portfolios and changes in selected yields.

A study by Jeffrey Frankel statistically tested several hypotheses regarding the parameters in investors' asset demand functions. Frankel tested the hypothesis that the supply of Federal bonds has a positive effect on the expected relative return on equities, Federal bonds, and corporate bonds. He concluded that portfolio effects are close to zero.[6]

In 1985, the Federal Reserve prepared a staff paper for the House Committee on Energy and Commerce entitled "The Effect of Mortgage-Related Securities on Corporate Finance". The study attempted to measure the effects on corporate bond yields of changes in expected returns on holdings of commercial paper instruments and changes in the outstandings, relative to total wealth, of each of corporate bonds, Treasuries, mortgages, and mortgage pool securities. The results, like those of other studies, were not decisive.[7]

Conclusion

Treasury's analysis of the impact of GSE borrowing on Treasury borrowing did not show that increases in GSE borrowing had any effect on Treasury yields in the 1980s. The data show that GSE borrowing has grown enormously relative to Treasury borrowing and to total funds raised. Other factors more than offset any upward pressures on interest rates from the increase in GSE borrowing, and yields on Treasury and GSE securities trended downward on balance after peaking early in the decade. Foreigners substantially increased their demands for Treasury securities, as well as other dollar-denominated financial assets. Also, lesser rates of inflation prompted investors in general to reduce the inflation premiums they demanded when investing in U.S. financial assets.

ENDNOTES

1. Treasury has adopted the Federal Reserve Board Flow of Funds system's convention for classifying mortgage-backed securities. The Federal National Mortgage Association and Federal Home Loan Mortgage Corporation mortgage-backed pass-through securities are categorized as net credit market borrowing in the financial sector, although at the time of their initial creation the pass-throughs may not have involved an actual transfer of funds. A large portion of pass-through securities is generated through swap programs, in which thrift institutions swap their whole mortgages for securitized financial instruments. Subsequently, the thrifts can and do raise funds in credit markets by selling their mortgage-backed instruments in secondary markets. The pass-through securities are traded on the same book-entry system as are other GSE obligations, and debt issues of U.S. government agencies.

2. For purposes of this May 1990 Treasury study, GSE is defined to include the Federal Farm Credit System, Banks for Cooperatives, Federal Home Loan Banks, Federal Home Loan Mortgage Corporation, Federal National Mortgage Association, and the Student Loan Marketing Association. The College Construction Loan Insurance Association and Federal Agricultural Mortgage Corporation are included in the May 1990 Treasury study, but to date have not borrowed.

3. This chapter uses data from the Federal Reserve Board of Governors' Flow-of-Funds system of accounting for funds raised in the U.S. economy as the basis for comparisons with GSE borrowing. The Federal Reserve's measure of total funds raised is total credit market borrowing plus funds raised through corporate equities. In addition to the amounts in the Federal Reserve's measure of total funds raised, Treasury includes Federal funds and security RPs, and security credit.

4. The 10-year Treasury rate was selected to approximate the maturity of Fannie Mae and Freddie Mac mortgage-backed securities.

5. For a review of literature and theoretical models, see "Loan Guarantees and Crowding Out" by Herbert Kaufman, Conference on the Economics of Federal Credit Activity, Part II--Papers, The Congress of the United States Congressional Budget Office, 1980, pp. 67-110.

6. Jeffrey A. Frankel, "Portfolio Crowding-out, Empirically Estimated", The Quarterly Journal of Economics, Vol. 100, Supplement dated 1985, pp. 1041-1063.

7. The important coefficients of the asset-augmented term structure equation were found to be not significant at the 95% level. However, the coefficient for mortgage pools relative to total wealth did have the expected, or positive, sign. That is, an increase in mortgage pools is associated with an increase in corporate bond yields.

Table 1
Outstanding Market Borrowing

($ billions, calendar year-end)

	1980	1989	Change	Compounded Annual Growth Rate (%)
Total GSE	177.1	862.6	684.5	19.2
Treasury (from public)	737.8	2,245.2	1,507.4	13.2
Total Funds Raised*	6,471.8	17,225.1	10,753.3	11.5
GSE Detail:				
Debt Issues				
Fannie Mae	55.2	116.1	60.9	
Freddie Mac	4.6	24.1	19.5	
FHLBanks	37.3	136.1	98.8	
Farm Credit System	63.0	56.6	(6.4)	
Farmer Mac	**	0.0	0.0	
Sallie Mae	**	28.6	28.6	
Connie Lee	**	0.0	0.0	
Total Issues	160.1	361.5	201.4	9.5
Pools***				
Fannie Mae	**	228.2	228.2	
Freddie Mac	17.1	272.9	255.9	
Total Pools	17.0	501.1	484.1	45.6
Total GSE	177.1	862.6	684.5	

*Includes funds raised through equities.

**GSE not generating credit market debt as of December 1980. Connie Lee created in 1986, Farmer Mac created in 1988.

***Freddie Mac pass-throughs created in 1971; Fannie Mae pass-throughs created in 1981.

Source: GSE balance sheets and Federal Reserve Flow-of-Funds data (adjusted).

Table 2
Net New Borrowing

($ billions, calendar year)

	5 Year Period		Annual				
	1980-84	1985-89	1985	1986	1987	1988	1989
Business	948.9	1,318.6	261.3	334.5	209.8	241.5	271.4
Financial Intermediaries	321.5	683.3	155.4	238.2	172.3	70.4	47.0
Treasury & Agencies	1,010.2	1,611.5	324.7	389.0	317.8	279.6	300.3
State & local	108.1	215.2	90.9	36.2	33.6	29.8	24.7
Foreign	97.9	52.0	4.9	10.9	2.8	7.8	25.6
Households	748.7	1,416.9	304.0	297.4	256.6	292.9	266.0
Total Funds Raised	3,235.4	5,297.5	1,141.2	1,306.2	993.0	922.0	935.0
Memo:							
GSEs							
Debt Issues	101.6	124.3	20.6	12.5	32.4	40.7	18.1
Mortgage-backed securities	91.8	394.0	48.4	110.9	86.2	52.1	96.4
Total GSE	193.4	518.3	69.0	123.4	118.6	92.8	114.5
Other							
Fed Agency	(2.3)	19.0	(0.1)	0.4	1.5	17.4	(0.2)
GNMA Mortgage Pools	104.2	189.9	32.2	50.6	53.1	24.7	29.3
FICO & REFCORP	--	12.7	--	--	1.2	4.7	6.7
Total Other	101.9	221.6	32.1	51.0	55.8	46.8	35.8
GSE & Other	295.3	739.9	101.1	174.4	174.4	139.6	150.3
Treasury	714.9	871.6	223.6	214.6	143.4	140.0	150.0
Treasury & Agencies	1,010.2	1,611.5	324.7	389.0	317.8	279.6	300.3

Totals may not sum due to rounding.

Source: Federal Reserve Board Flow-of-Funds data (adjusted).

Table 3
Net New Borrowing

(% distribution, calendar year)

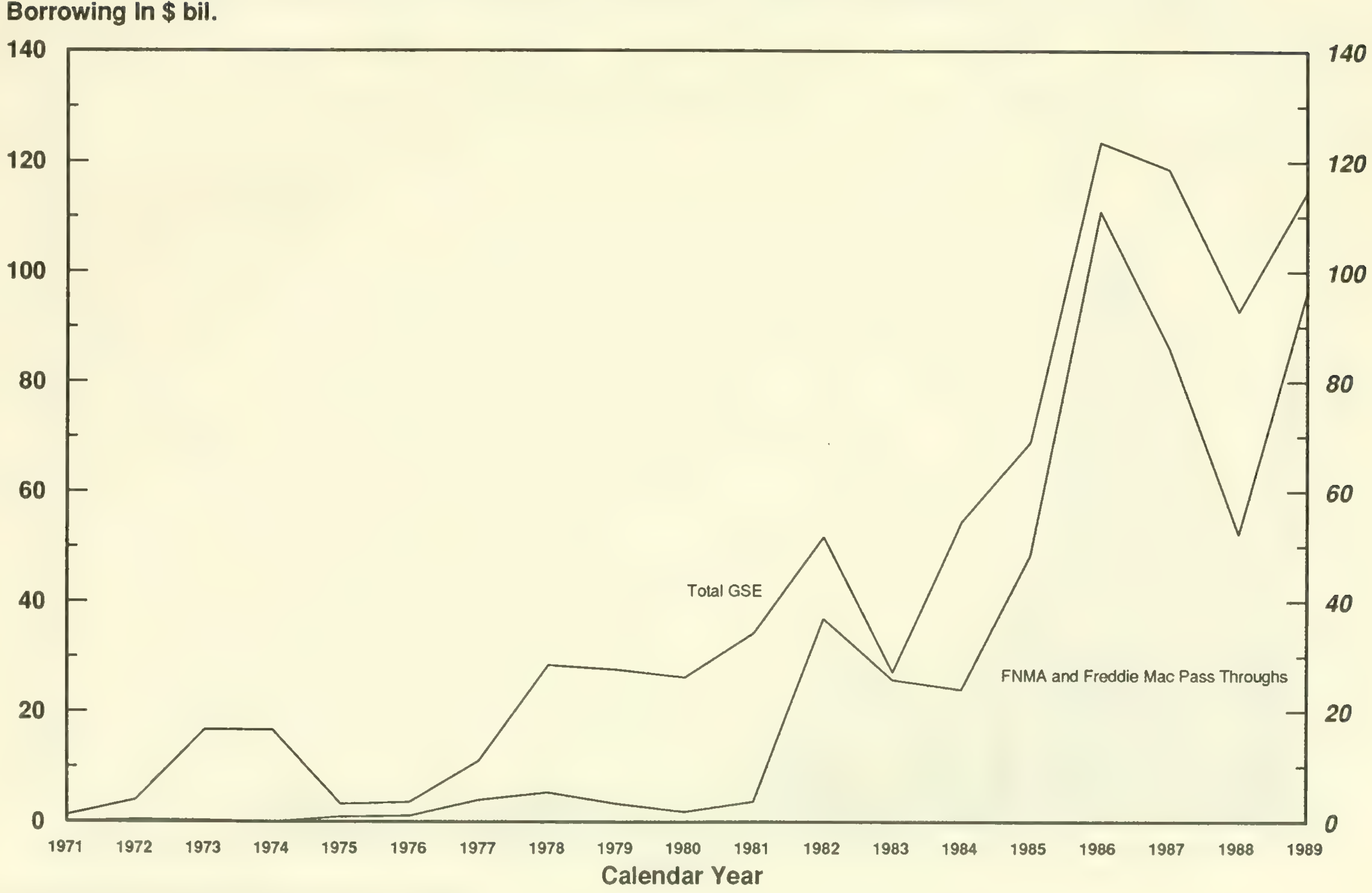
	5 Year Period		Annual				
	1980-84	1985-89	1985	1986	1987	1988	1989
Business	29.3	24.9	22.9	25.6	21.1	26.2	29.0
Financial Intermediaries	9.9	12.9	13.6	18.2	17.4	7.6	5.0
Treasury & Agencies	31.2	30.4	28.5	29.8	32.0	30.3	32.1
State & local	3.3	4.1	8.0	2.8	3.4	3.2	2.6
Foreign	3.0	1.0	0.4	0.8	0.3	0.8	2.7
Households	23.1	26.8	26.6	22.8	25.8	31.8	28.4
Total Funds Raised	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Memo:							
GSEs							
Debt Issues	3.1	2.3	1.8	1.0	3.3	4.4	1.9
Mortgage-backed securities	2.8	7.4	4.2	8.5	8.7	5.7	10.3
Total GSE	5.9	9.7	6.0	9.4	11.9	10.0	12.3
Other							
Fed Agency	0.0	0.4	0.1	0.0	0.1	1.9	0.0
GNMA Mortgage Pools	3.2	3.6	2.8	3.9	5.4	2.7	3.1
FICO & REFCORP	--	0.2	--	--	0.1	0.5	0.7
Total Other	3.2	4.2	2.8	3.9	5.6	5.1	3.8
GSE & Other	9.1	13.9	8.9	13.4	17.5	15.1	16.1
Treasury	22.1	16.5	19.6	16.4	14.5	15.2	16.0
Treasury & Agencies	31.2	30.4	28.5	29.8	32.0	30.3	32.1

Totals may not sum due to rounding.

Source: Federal Reserve Board Flow-of-Funds data (adjusted).

Chart 1

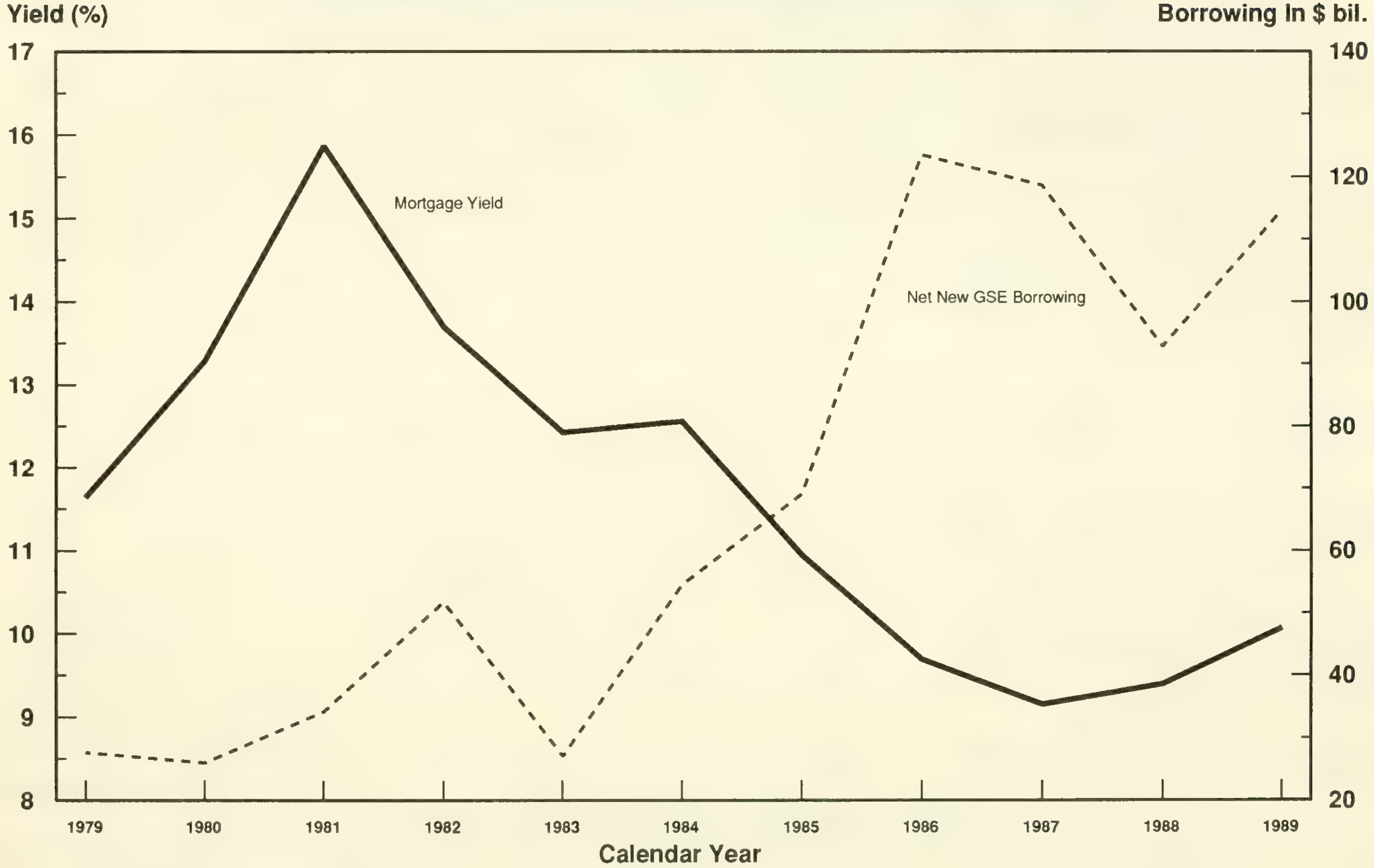
Net New GSE Borrowing



Source: Federal Reserve Board Flow-of-Funds Data (Adjusted).

Chart 2

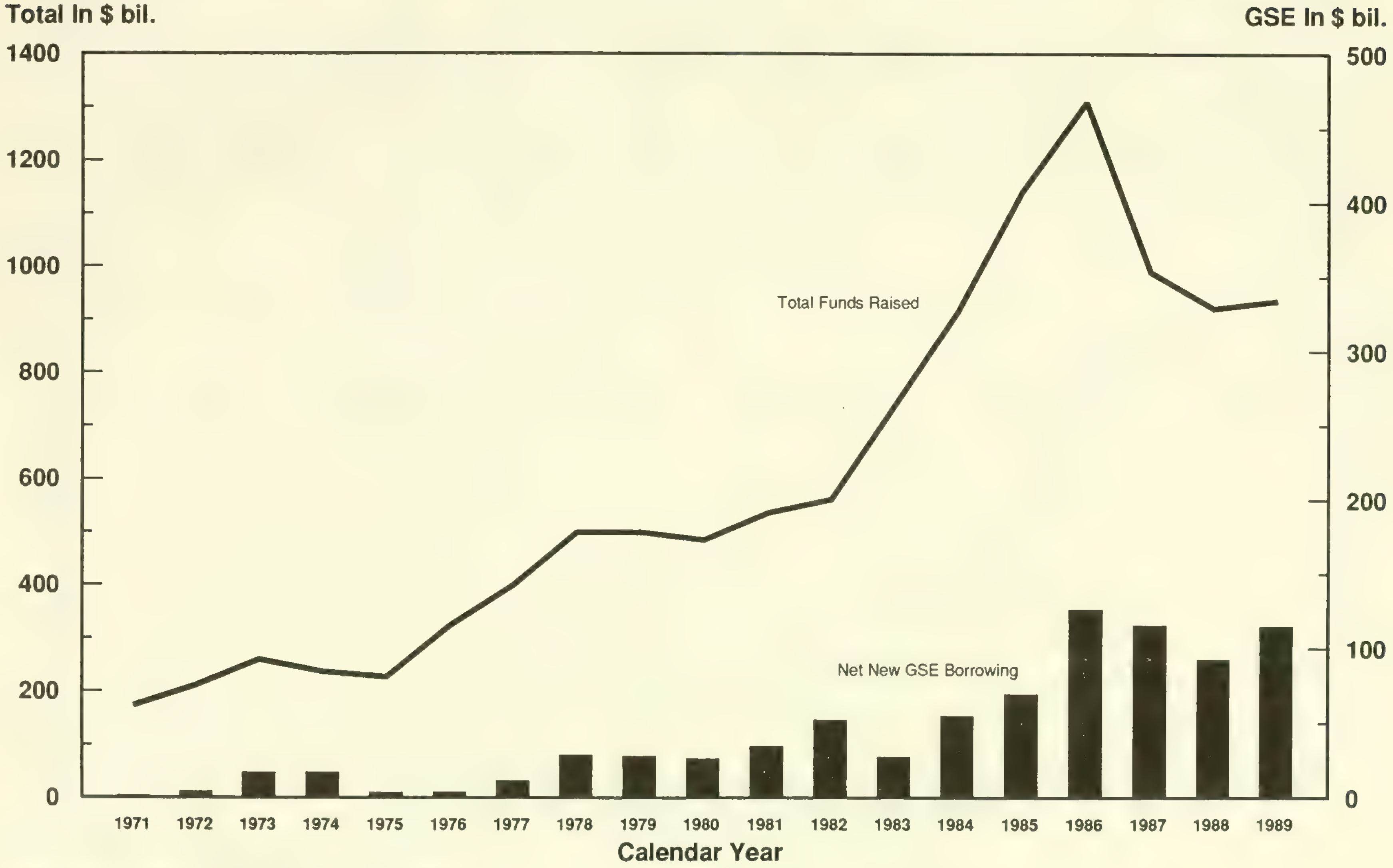
Mortgage Yields Versus GSE Borrowing



Sources: FHLBB December Effective Mortgage Yield;
Federal Reserve Board Flow-of-Funds Data (Adjusted).

Chart 3

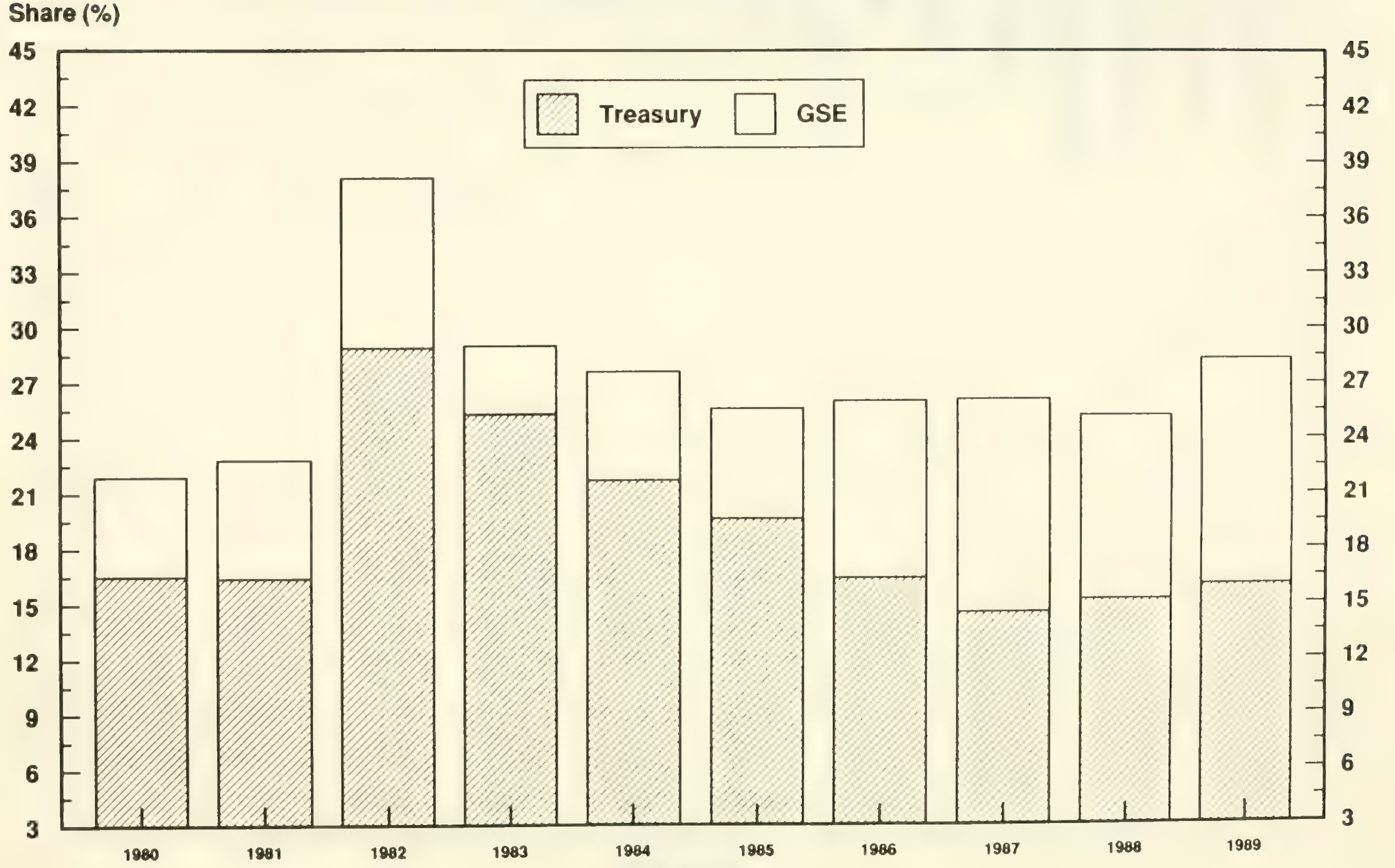
Total Funds Raised Versus Net New GSE Borrowing



Source: Federal Reserve Board Flow-of-Funds Data (Adjusted).

Chart 4

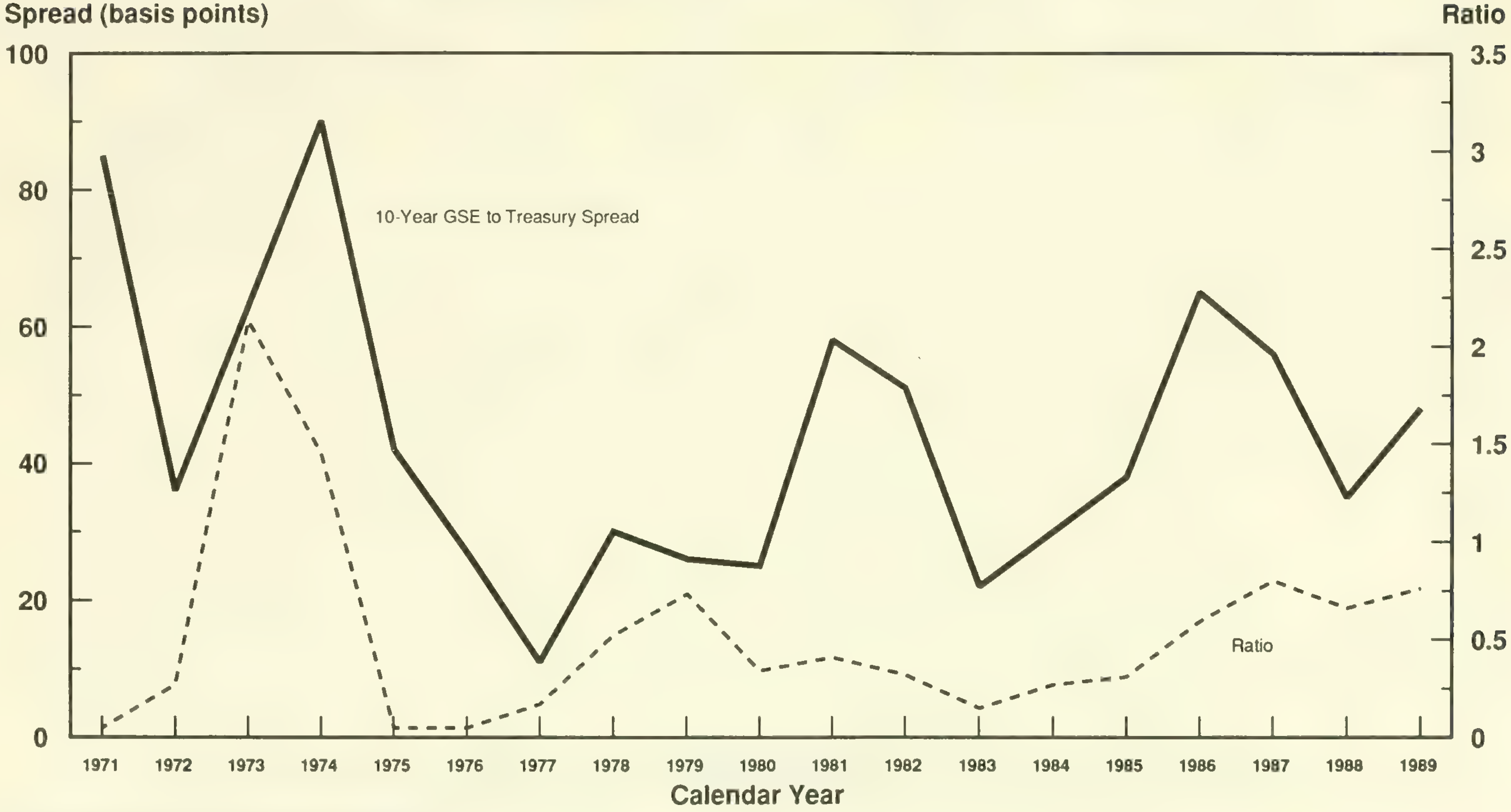
Share of Total Funds Raised



Source: Federal Reserve Board Flow-of-Funds Data (Adjusted)

Chart 5

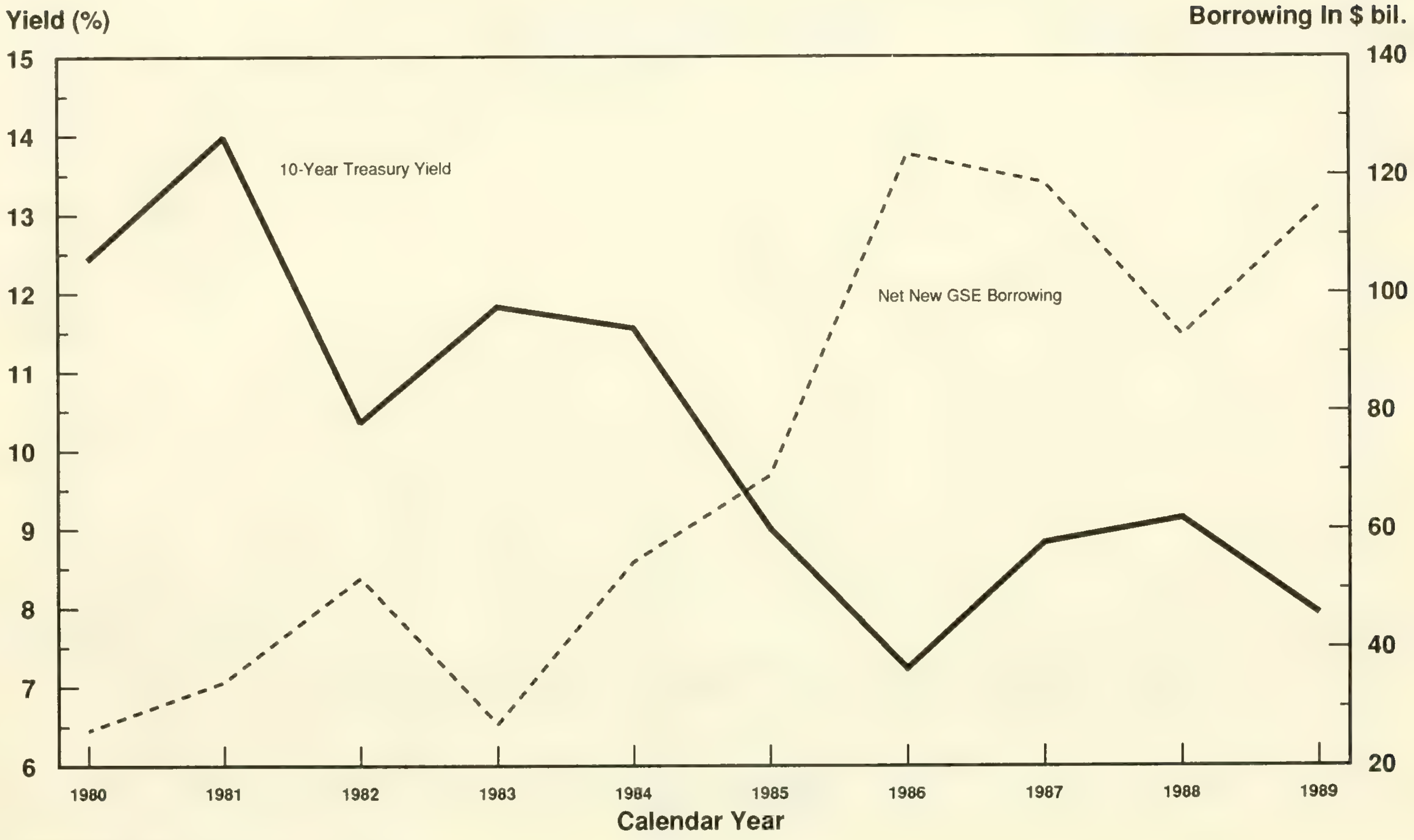
GSE Spreads
Versus
Ratio of GSE to Treasury Borrowing



Sources: Salomon Bros. Spreads For 10-Year Maturities;
Federal Reserve Flow-of-Funds Data (Adjusted).

Chart 6

Treasury Yields Versus Net New GSE Borrowing



Source: Yield on Last Trading Day of Year, Treasury
Federal Reserve Board Flow-of-Funds Data (Adjusted).

APPENDIX A

FEDERAL NATIONAL MORTGAGE ASSOCIATION

DESCRIPTION

Creation and purpose

The Federal National Mortgage Association (Fannie Mae) is a Federally chartered, shareholder-owned, and privately managed corporation. It is the sixth largest corporation in the United States based on assets.[1] At the end of 1989, Fannie Mae had $124.3 billion in assets, of which $110.7 billion were mortgages, and had $228.2 billion of mortgage-backed securities (MBS) outstanding (including $11.7 billion of MBS in portfolio).

Fannie Mae was originally created by the Federal Government in 1938 as a United States Government Agency and was transformed to a private corporation in 1968. Fannie Mae provides a link between institutions that originate mortgages and the capital markets. It either purchases mortgages for its own portfolio from primary lenders, thereby replenishing such lender's funds, or issues guaranteed MBS exchange for mortgages. Fannie Mae acquires funds to purchase mortgages by issuing debt in the capital markets.

Early history. The Federal Government took a number of steps during the Depression of the 1930s to assist the housing industry.[2] The economic collapse had led to large numbers of bank failures, as well as to reduced liquidity of the institutions that survived.

At the time, mortgages were relatively short-term instruments, with steep balloon payments, that had to be rolled over every three to five years. Frequently, when the homeowner went to roll over the mortgage, either the originating financial institution had failed, or it was too illiquid to create a new loan. The outcome was a virtual stagnation of the home construction and finance industries.

In 1932, the Federal Home Loan Bank Act [P.L. 72-304] set up the Federal Home Loan Bank System, primarily for thrift institutions, in order to make available more adequate and better distributed funds for home financing. In the following year, the Home Owners' Loan Act of 1933 [P.L. 73-43] set up the Home Owners' Loan Corporation (HOLC) as an emergency measure to help refinance existing home mortgages of borrowers who were faced with foreclosure or could not find new financing elsewhere. The significance of the HOLC is that it was a pioneer in the now popular long-term amortizing mortgage.

Subsequently, the National Housing Act of 1934 [P.L. 73-479] created the Federal Housing Administration (FHA), headed by a Federal Housing Administrator, and an array of programs designed to promote home construction and home financing. The objectives were to provide liquidity to primary mortgage lenders, to encourage them to originate FHA-insured, fully amortizing 30-year loans, and to provide them with funds to make new loans.

Title III of the National Housing Act of 1934 provided for the chartering of national mortgage associations. These entities were to be privately owned and federally supervised, with the authority to purchase and sell mortgages insured by the FHA with funds raised through the issuance of debt securities.

However, four years after the passage of the legislation, not one national mortgage association had been formed. As a result, the Federal National Mortgage Association (Fannie Mae) was created as a Government agency in 1938 under Title III of the National Housing Act, as then amended. [P.L. 75-424] Its primary purpose was to buy and sell FHA-insured mortgages, with funds obtained through borrowing from Treasury or through issuance of bonds or debentures to investors. In 1948, Fannie Mae was authorized to purchase VA-insured mortgages. [P.L. 80-864]

Housing Act of 1954. In 1954, Title III of the National Housing Act of 1934 was renamed the Federal National Mortgage Association Charter Act under the Housing Act of 1954 ("1954 Charter Act"). [P.L. 83-560] This Title authorized Fannie Mae to conduct and to maintain separate accounts for three principal activities:

(1) Secondary Market Operations. To provide supplementary assistance to the private secondary market for residential mortgages by providing a degree of liquidity for mortgage investments, thereby improving the distribution of investment capital available for residential mortgages.

(2) Special Assistance Functions. To provide special assistance to certain residential mortgage programs that are determined to be in the public's interest by the President, or specifically designated by Congress. The programs were operated for the account of the Federal Government with U.S. Treasury funds.

(3) Management and Liquidating Functions. To manage and liquidate for the account of the Government the portfolio of mortgages that it had acquired pursuant to contracts with the Government between its inception in 1938 and the passage of the 1954 Charter Act, and for mortgages acquired under special Government programs covered by the Special Assistance Functions, in an orderly manner with a minimum of adverse effects upon the

residential housing market and a minimum loss to the Federal Government.

To accomplish its secondary market operations, Fannie Mae was authorized to make commitments, to purchase, to sell, and to service FHA- or VA-insured mortgages. However, mortgage purchases were to be confined, so far as practical, to mortgages that would be considered marketable by the private sector.

Prior to 1954, Fannie Mae had raised funds for its mortgage purchases through borrowing from the Treasury or by issuing notes backed by the full faith and credit of the U.S. Government. The Act removed Government backing for Fannie Mae's borrowing to fund its secondary market operations. However, the needs of the Special Assistance Functions (which later became Government National Mortgage Association (Ginnie Mae) programs) were to be financed by a combination of Government appropriations and Government-backed debt.

The 1954 Charter Act also provided for the gradual transfer of Fannie Mae to private ownership through required stock purchases by mortgage sellers and the gradual retirement of Treasury-owned preferred stock. The Act specified that once the Treasury stock had been retired, legislation be submitted to Congress to transfer to the holders of the common stock the assets and liabilities of Fannie Mae in connection with its secondary market operations "in order that such operations may thereafter be carried out by a privately owned and privately financed corporation."

Housing and Urban Development Act of 1968. In 1968, Congress passed legislation ("1968 Charter Act") [P.L. 90-448] completing the transfer of Fannie Mae to private ownership by amending Fannie Mae's Charter. Congress partitioned the then-existing Fannie Mae into two parts: a privately owned corporation (Fannie Mae) and a new Government agency, Ginnie Mae, within the Department of Housing and Urban Development (HUD). Ginnie Mae took over the Special Assistance Functions designed to help finance federally subsidized housing by securitizing FHA, VA, and Farmers Home Administration (FmHA) mortgages. Ginnie Mae was also authorized to manage and liquidate the federally owned mortgage portfolios that had been built up by the old Fannie Mae.

The 1968 amendments established the reconstituted Fannie Mae as a stockholder-owned and -managed corporation, without any change in its statutory purpose to provide supplementary assistance to the private secondary market for residential mortgages, but with broad discretion to determine its policies and govern its operations. It also established a regulatory structure, under the auspices of HUD, to assure Fannie Mae's adherence to its public purpose. In addition, the legislation authorized Fannie Mae to issue securities backed by pools of mortgages, or MBS.

Emergency Home Finance Act of 1970. In another effort to increase the availability of housing, Congress passed the Emergency Home Finance Act of 1970. [P.L. 91-351] Among the major provisions was the creation of the Federal Home Loan Mortgage Corporation (Freddie Mac), which was to be owned by the Federal Home Loan Banks and was to provide a secondary market for conventional home mortgages. Parallel authority to deal in conventional home mortgages was also given to Fannie Mae.

In order to protect against the accumulation of high-risk mortgages, the legislation contained specific limitations on the kind and quality of mortgages eligible for purchase by Fannie Mae and Freddie Mac. It required both Fannie Mae and Freddie Mac to deem the mortgages that each would purchase "be of such quality, type, and class as to meet, generally, the purchase standards imposed by private institutional mortgage investors." [Charter Act, Sec. 304 (a)(1)]

Under this Act, they were also restricted to purchasing conventional loans having a loan-to-value (LTV) ratio of less than 75 percent (raised to 80 percent in 1974) unless: (1) the seller retained a participation of not less than 10 percent; (2) the seller agreed to repurchase or replace the mortgage in the event of default; or (3) the loan balance in excess of 75 percent (also raised to 80 percent) was privately insured or guaranteed. Furthermore, loans originating more than one year prior to purchase could not constitute more than 10 percent (raised to 20 percent in 1981) of total conventional purchases, nor could the dollar amount of a mortgage exceed FHA limits (in 1980, the limit was instead indexed to national housing prices[3]). Mortgage loans that qualify for purchase by Fannie Mae or Freddie Mac are referred to as conforming loans.

FIRREA. The Financial Institutions Reform, Recovery, and Enforcement Act of 1989 [P.L. 101-73] restated the statutory purpose of both Fannie Mae and Freddie Mac to:

(1) provide stability in the secondary mortgage market for home mortgages;

(2) respond appropriately to the private capital market; and

(3) provide ongoing assistance to the secondary market for home mortgages (including mortgages securing housing for low- and moderate-income families involving a reasonable return) by increasing the liquidity of mortgage investments and improving the distribution of investment capital available for home mortgage financing.

Thus Fannie Mae and Freddie Mac are charged with maintaining a continuous presence in the secondary markets, in good as well as in bad economic times, and with developing products and services appropriate to changing demands. Lastly, they are responsible for the continuing development of mortgage products and services and financing methods that improve the efficiency of the secondary markets to distribute investment capital for mortgages.

Current organization

Fannie Mae is a federally chartered and shareholder-owned corporation under private management. Fannie Mae's overall policies are established by an 18-member Board of Directors. Thirteen directors are elected by the shareholders, and the remaining five are appointed by the President of the United States.

Fannie Mae has about 2,400 employees, about twice the number of 8 years ago. About one-half work in the Washington, D.C. headquarters, and the remainder in five regional offices: Northeast (Philadelphia), Southeast (Atlanta), Southwest (Dallas), Midwest (Chicago), and Western (Pasadena). They also have satellite offices in Oklahoma City, Miami, Houston, and Anchorage.

The chairman of Fannie Mae is the chief executive officer and the president is the chief operating officer. There are five executive vice presidents and two senior vice presidents who report to the president and form the core of the major management decision-making committees: the operating, credit policy, and asset/liability management committees.

There is a market room in Washington D.C. for consolidated funding, trading, and pricing operations for commitments and mortgage-related products. But most day-to-day customer activities are conducted at regional offices. Each regional office is headed by a senior vice president and has personnel responsible for marketing, quality control, property disposition, multifamily, accounting/administration, and legal counsel. Staff at the regional offices review lender approval applications; help lenders with underwriting and pooling for MBS; buy mortgages under standard and negotiated purchase programs; and monitor servicing and reporting systems.

Business activities

Fannie Mae provides funds for the mortgage market by purchasing mortgage loans for its own portfolio, or by issuing

MBS in exchange (swapping) for the mortgages. In the first instance, it supplies funds directly to the primary lender to make more loans. In the second, the primary lender can either hold the MBS in portfolio as an earning asset or sell it for funds in the capital markets. Most of the MBS that Fannie Mae issues are in exchange for pools of mortgages from lenders, but it also issues MBS based on pools of mortgages from its own portfolio.

Fannie Mae's portfolio totaled $110.7 billion at the end of 1989, accounting for about 5 percent of total residential mortgages outstanding in the United States. In contrast, Freddie Mac's portfolio, because it passes through about 95 percent of its business to MBS, totaled only $21.9 billion at the end 1989. Fannie Mae's portfolio has increased at a 7.6 percent average annual rate since 1980, but at only a 2.9 percent rate since 1985.

Fannie Mae started offering MBS in late 1981, and by the end of 1985 it had $55.0 billion outstanding. Since 1985, its MBS outstanding have increased at a 42.7 percent annual rate, to $228.2 billion at the end of 1989. Combined, Fannie Mae's portfolio and MBS account for about 14 percent of all residential mortgages outstanding, compared with about 12 percent for Freddie Mac.

Fannie Mae purchases primarily single-family, conventional, intermediate- and long-term, fixed-rate or adjustable-rate, first mortgage loans. However, it also purchases FHA/VA mortgages, multifamily mortgages, participation interests, second mortgages, and other mortgages that do not have a fully developed secondary market. The last group are frequently the result of negotiated transactions with lenders for products tailored to meet specific needs (negotiated products), while the others are generally purchased through Fannie Mae's standard product programs.

Fannie Mae's mortgage purchases are made under terms and conditions specified in a purchase contract called a commitment, whereby the lender agrees to sell, or swap, and Fannie agrees to buy a designated dollar amount of mortgages in exchange for cash or securities within a specified period of time (Cash or MBS programs). There are standard commitments, which are based on a standardized contract, and negotiated commitments, which include waivers to the basic contract or add credit enhancement requirements to it.

A lender initiates a cash purchase from Fannie Mae by obtaining a commitment. Commitment terms are of varying length, depending upon when the lender can deliver. For standard products, they are usually for 30-, 60-, or 90-days. There are also longer term (up to 12 months) standby cash commitments, whereby a lender purchases an option to sell mortgages to Fannie

Mae, but it must be converted to a mandatory commitment before it is exercised. In such cases, the yield is set at the time the standby cash commitment is converted to a mandatory commitment. About 60 percent of Fannie Mae's cash purchases in 1989 were made as the result of negotiated commitments.

For MBS transactions, there are optional (up to 180 days) commitments for standard products and both optional and mandatory commitments for negotiated products. About two-thirds of MBS commitments made in 1989 were negotiated commitments.

To satisfy commitment requirements for either the Cash or MBS programs, detailed information on the loans (but not the original documents) are submitted to Fannie Mae on or before the expiration of the commitment. For mandatory commitments, at least 95 percent of the committed amount must be submitted before expiration. If the full commitment cannot be satisfied, lenders may pair-off or repurchase all or part of the commitment at any time during the term of the commitment.

Mortgage servicing, that is, collecting payments from and conducting other dealings with the homeowners, is handled primarily by the lenders that originate the loans and sell them to Fannie Mae. Fannie Mae has extensive requirements for both the underwriting and the servicing of mortgages to help assure the borrower has the willingness and ability to pay the loan, sufficient collateral for the loan, and that collection and record keeping are timely and accurate. Fannie Mae compensates the servicer by paying a servicing fee, which can be a significant part of a servicer's income. However, with Fannie Mae approval, the lender can transfer the servicing function to another institution.

Financial structure

Fannie Mae provides funding for mortgages by issuing MBS or by selling debt securities. It issues MBS primarily in exchange for pools of mortgages from lenders, while it issues debt to fund purchases for its own portfolio.

Mortgage-backed securities. MBS are mortgage-backed pass-through trust certificates issued and guaranteed by Fannie Mae that represent undivided beneficial interests in the pools of mortgage loans or of other MBS formed by Fannie Mae. Fannie Mae serves as trustee. The pools of mortgage loans or MBS are not assets of Fannie Mae, nor are the outstanding securities liabilities of Fannie Mae. (Thus MBS, unless owned by Fannie Mae, are not on-balance sheet items.) Under its guarantee, Fannie Mae commits to make timely payments to investors of principal and interest on the loans underlying the securities, even if Fannie Mae has not received the payments on the loans from the servicer.

Fannie Mae offers a variety of MBS, beginning with the Standard MBS (minimum $1 million), which is usually a pool of one type of mortgage provided by one lender or out of Fannie Mae's portfolio. The MBS are based upon the type of loans backing the security: intermediate- or long-term, fixed-rate mortgages; adjustable-rate mortgages; multifamily mortgages; or FHA/VA mortgages. Fannie Majors MBS are large pools from multiple lenders (minimum $250,000 per lender) made up of these same mortgage types. MegaPool MBS are large pools from a single lender (minimum $5 million), which are created by combining pre-existing pools of loans. Fannie Mae also issues stripped MBS, which "strip apart" the principal and interest payments into separate classes of securities.

In addition, Fannie Mae issues Real Estate Mortgage Investment Conduits (REMICs). REMICs are a tax-advantaged trust structure provided for in the 1986 Tax Reform Act. REMIC securities represent a beneficial interest in a trust having multiple classes of mortgage securities. The securities are offered in tranches, generally of short-, intermediate-, and long-term maturities.[4] Like MBS, REMICs pay investors using the cash flows from the underlying mortgages or MBS; however, the principal and interest payments are allocated among the tranches in various ways. Most classes receive current interest payments on the outstanding principal, but principal payments do not start until all previous maturity classes are retired.

Debt securities. Fannie Mae obtains the funds it uses to buy mortgages for its portfolio and to finance its business operations primarily by selling unsecured general obligation debt securities to investors. At the end of 1989, short-term (less than 1-year) debt accounted for about 30 percent of the $116.1 billion of Fannie Mae debt outstanding, and longer term debt the remainder. Unlike Freddie Mac, Fannie Mae does not currently issue mortgage-backed bonds. It did issue some mortgage-backed bonds in the early 1980s, and it has very little still outstanding today (about $55 million). It does, however, issue short-term Dollar Rolls (RPs), with terms ranging from a few days to a few weeks, using mortgages as collateral.

Financial statements. Tables 1 and 2 present income statements and balance sheets for Fannie Mae for 1980-1989. In 1989, Fannie Mae earned a record $807 million, up from $507 million in the previous year. Its earnings have increased every year since 1985. From 1980 through 1985, it recorded losses in four out of six years.

According to Fannie Mae, the losses were attributable to an interest rate mismatch between the low yielding, long-term mortgages in its portfolio and the higher yielding short-term debt used to fund the portfolio.

Table 1
Fannie Mae Statements of Income

($ millions, except per share amounts)

For the years ended December 31:	1980*	1981*	1982*	1983*	1984*	1985*	1986*	1987	1988	1989
Summary statement of operations										
Interest Income	4,945	5,534	6,821	7,980	8,906	10,065	10,107	9,843	10,226	11,080
Interest Expense	4,924	5,997	7,327	7,989	8,996	9,926	9,723	8,953	9,389	9,889
Net interest income	21	(463)	(506)	(9)	(90)	139	384	890	837	1,191
Guaranty fees	0	0	16	54	78	112	175	263	328	408
Gain (loss) on sale of mortgages	0	0	44	118	21	11	31	(81)	12	9
Miscellaneous income, net	68	125	285	56	53	73	83	53	69	60
Provision for losses	(19)	27	(36)	(48)	(86)	(206)	(306)	(360)	(365)	(310)
Administrative expenses	(44)	(49)	(60)	(81)	(112)	(142)	(175)	(197)	(218)	(254)
Income (loss) before federal income taxes	26	(360)	(257)	90	(136)	(13)	192	568	663	1,104
Provision for federal income taxes	(12)	170	123	(41)	65	6	(87)	(192)	(156)	(297)
Net income (loss) before extraordinary item	14	(190)	(134)	49	(71)	(7)	105	376	507	807
Extraordinary item	0	0	29	0	0	0	0	0	0	0
Net income (loss)	14	(190)	(105)	49	(71)	(7)	105	376	507	807
Per share data**										
Earnings (loss):										
Primary	0.08	(1.07)	(0.57)	0.25	(0.36)	(0.03)	0.48	1.55	2.14	3.14
Fully diluted	0.08	(1.07)	(0.57)	0.25	(0.36)	(0.03)	0.47	1.54	2.11	3.10
Cash dividends	0.37	0.13	0.05	0.05	0.05	0.05	0.07	0.12	0.24	0.43

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*Amounts have been restated to reflect the retroactive implementation of FAS 91. Amounts for years prior to 1983 have not been restated; however, a significant portion of commitment fees income of $59, $113, and $264 million included in miscellaneous income for the years 1980, 1981, and 1982, respectively, would have been deferred to future years under FAS 91. Accordingly, comparisons of the years 1980-1982 with later years are inappropriate.

**Amounts reflect a three-for-one stock split effective in October 1989.

Source: Fannie Mae.

Table 2
Fannie Mae Balance Sheet Data

($ millions, year-end)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Assets										
Mortgages at unpaid principal balances:										
Single-family:										
Conventional:										
Fixed-rate:										
15 year	--	--	--	--	--	2,663	12,777	17,384	17,823	18,719
30 year	18,358	21,153	27,790	32,534	38,781	42,402	45,399	43,930	43,174	48,085
Adjustable-rate	—	107	3,332	7,126	11,729	16,956	14,343	13,723	21,040	22,020
Second mortgage	--	175	1,636	2,385	2,817	2,899	2,169	1,421	1,561	1,614
Government insured or guaranteed	33,417	34,551	33,742	31,000	29,016	27,414	15,968	13,306	12,235	11,857
Multifamily:										
Conventional:										
Fixed-rate	--	--	31	63	635	1,319	2,301	2,487	2,771	4,055
Adjustable-rate	--	--	--	--	71	46	24	14	12	10
Government insured or guaranteed	5,552	5,426	5,283	5,148	5,060	4,950	4,852	4,481	4,397	4,361
Total unpaid principal balance	57,327	61,412	71,814	78,256	88,109	98,649	97,833	96,746	103,013	110,721
Less:										
Unamortized purchase discount and deferred fees	(1,738)	(1,783)	(2,458)	(3,009)	(3,974)	(4,040)	(3,710)	(3,081)	(2,914)	(2,740)
Allowance for losses (portfolio):										
Single-family:										
Fixed and adjustable-rate	(134)	(100)	(125)	(112)	(92)	(105)	(151)	(169)	(202)	(190)
Government insured or guaranteed	(2)	(2)	(2)	(4)	(4)	(4)	(5)	(3)	(3)	(4)
Multifamily:										
Fixed and adjustable-rate	--	--	—	--	--	(2)	(18)	(22)	(26)	(30)
Government insured or guaranteed	--	(1)	(1)	(1)	(1)	(1)	--	(1)	(1)	(1)
Total mortgages (net)	55,453	59,526	69,228	75,130	84,038	94,497	93,949	93,470	99,867	107,756
Cash	95	19	23	30	49	63	87	265	60	94
Investments	1,556	1,047	2,430	1,689	1,840	1,866	1,775	5,661	8,088	11,776
Present value of excess yield	--	—	1	31	32	48	61	85	91	106
Accrued interest receivable	454	510	688	770	872	949	904	811	939	1,064
Other assets:										
Building and equipment	39	39	40	43	49	54	64	68	81	88
Other	233	361	402	343	518	1,225	2,367	2,683	2,714	2,983
Real estate owned (net)	49	76	169	347	400	374	414	416	418	448
Total Assets	57,879	61,578	72,981	78,383	87,798	99,076	99,621	103,459	112,258	124,315

Note: Data for years ended 1980-1986 have been restated for the effects of FAS 91. Data for the years ended 1980-1988 have been restated to include the effect of the three-for-one common stock split announced in September 1989.

Source: Fannie Mae.

Table 2 (continued)
Fannie Mae Balance Sheet Data

($ millions, year-end)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Liabilities										
Debt Securities:										
Reverse repos	--	--	--	--	--	--	271	11	1,456	725
Notes, bonds, debentures:										
Due within 1 year	15,542	17,365	25,781	26,860	30,761	31,639	31,023	29,707	34,508	35,221
Due after 1 year	38,052	39,900	42,289	46,196	50,773	60,238	60,449	65,242	66,869	77,853
Subordinated securities:										
Due within 1 year	--	--	--	--	500	300	--	--	635	400
Due after 1 year	1,286	1,286	1,544	1,538	1,685	1,808	1,820	2,097	1,991	1,865
Total Debt	54,880	58,551	69,614	74,594	83,719	93,985	93,563	97,057	105,459	116,064
Accrued interest payable	1,238	1,369	1,724	1,905	2,153	2,283	2,305	2,145	2,173	2,424
Other liabilities	451	578	690	884	1,008	1,799	2,571	2,446	2,366	2,836
Total Liabilities	56,569	60,498	72,028	77,383	86,880	98,067	98,439	101,648	109,998	121,324
Stockholders' equity										
Common stock	374	374	414	416	416	460	465	516	517	520
Additional paid-in capital	268	268	302	308	308	372	448	773	777	787
Retained earnings	670	440	239	278	196	179	269	617	1,067	1,771
Less treasury stock, at cost	(2)	(2)	(2)	(2)	(2)	(2)	--	(95)	(101)	(87)
Total stockholders' equity	1,310	1,080	953	1,000	918	1,009	1,182	1,811	2,260	2,991
Total liabilities and stockholders' equity	57,879	61,578	72,981	78,383	87,798	99,076	99,621	103,459	112,258	124,315
MBS Issued										
Lender originated	--	717	10,823	8,922	12,567	22,331	48,886	57,078	48,942	64,396
Own originated	--	0	3,147	4,418	979	1,318	11,680	6,151	5,936	5,368
Total MBS issued	--	717	13,970	13,340	13,546	23,649	60,566	63,229	54,878	69,764
MBS Outstanding										
Lender originated	--	717	11,354	19,627	31,254	49,654	82,697	122,609	156,999	203,728
Own originated	--	0	3,096	5,494	4,961	5,333	14,477	17,351	21,251	24,504
Total MBS outstanding	--	717	14,450	25,121	36,215	54,987	97,174	139,960	178,250	228,232

Fannie Mae's total assets rose at a 5.8 percent annual rate between 1985 and 1989, compared with an 11.3 percent rate of growth between 1980 and 1985.

Regulation and oversight

Since the enactment of the 1954 Charter Act, the Secretary of the Treasury has had the authority to approve Fannie Mae issuances of obligations, while, under the 1968 Charter Act, the Secretary of HUD was given general regulatory power over Fannie Mae.

Secretary of Treasury. Fannie Mae is authorized to issue, upon approval of the Secretary of the Treasury, and have outstanding obligations with maturities and interest rates approved by Treasury. The law does, however, limit outstanding obligations to 15 times capital, surplus, reserves, and undistributed earnings (HUD can and has raised the ratio. See below). Aside from the approval of new forms of securities, the Treasury has used its statutory authority to ensure that securities issued by Government-sponsored enterprises (GSEs) and other Government agencies are marketed in an orderly way. The full extent of Treasury's authority is not clear.

In fact, Treasury coordinates the timing of the issuances of Federal agencies and GSEs generally, pursuant to various statutory provisions. When agencies are aware of the borrowing schedules of other agencies and also of the Treasury, they have usually scheduled their market activity accordingly, and the Treasury has usually approved borrowing in a routine fashion.

Fannie Mae typically issues its longer term debentures at a specific time each month, on a schedule approved by Treasury, though it may issue short-term discount notes daily. If Fannie Mae wishes to deviate from the calendar, it must seek Treasury's approval.

In addition, at the discretion of the Secretary of the Treasury, the Treasury is authorized to purchase up to $2.25 billion of Fannie Mae debt.

Secretary of HUD. The 1968 Charter Act gives the Secretary of HUD both specific and general regulatory powers over Fannie Mae to assure the fulfillment of Fannie Mae's public mission. HUD has general regulatory powers over Fannie Mae to "make such rules and regulations as shall be necessary and proper to ensure that the purposes of [the Charter Act] are accomplished." [Charter Act, Sec. 309 (h)]

According to the Charter Act, HUD's specific powers are:

(1) to approve, before initiation, Fannie Mae's purchasing, servicing, selling, lending on the security of, or otherwise dealing in, conventional mortgages, home improvement loans, or mortgages on manufactured homes;

(2) to approve the issuance of stock and debt obligations convertible into stock;

(3) to require that a reasonable portion of mortgage purchases be related to the national goal of providing adequate housing for low- and moderate-income families, but with reasonable economic returns to the corporation;

(4) to examine and audit the books and financial transactions;

(5) to require Fannie Mae to make reports to HUD on its activities;

(6) to limit cash dividends on common stock to a rate determined to be a fair rate of return after consideration of Fannie Mae's current earnings and capital condition;

(7) to raise the statutory 15-to-1 debt-to-capital ratio limit (currently, it is 20 to 1).

The 1968 Charter Act, as amended in 1984 [P.L. 98-440], also provides that HUD must respond to a request by Fannie Mae for approval of a new activity over which HUD has oversight authority no later than 45 days following the submission of the request, which can be extended another 15 days if HUD requests more information. The Charter Act requires that HUD either approve such request, or transmit a report to Congress explaining why it was not approved.

In the wake of FIRREA, the Secretary of HUD has created within HUD a Regulatory Review Board to coordinate his exercise of existing regulatory authority over Fannie Mae and his new oversight authority over Freddie Mac. The Review Board includes the Under Secretary, the General Counsel, the Assistant Secretary for Housing - FHA Commissioner, the Assistant Secretary for Policy Development and Research, the Assistant Secretary for Community Planning and Development, and the President of Ginnie Mae.

In addition, FIRREA grants the General Accounting Office auditing authority over Fannie Mae's mortgage transactions.

Private rating agency ratings. Moody's and S&P have both rated Fannie Mae's senior debt as triple-A. Both rating agencies state that the rating is based on the implied Federal guarantee backing Fannie Mae's debt and its important role in U.S. housing finance. The assumption is that the Federal Government would step in, if needed, to support Fannie Mae because of its Congressional origins and its importance to the U.S. housing market.

In testimony before the Senate Banking Committee in October 1989, a representative of S&P stated that Fannie Mae's debt, excluding the impact of the implied Government guarantee, would be rated at least investment grade, based on publicly available information. In response to further inquiry during testimony, S&P noted that the debt would be in the lower end of investment grade. S&P has stated that this rating assumes that Fannie Mae continues to add capital and maintains its geographic diversification.

Relationship to the Federal Government

As with other GSEs, Fannie Mae benefits from perceived links to the Federal Government that support the capital market's perception that its debt and MBS have an implied Federal guarantee. The effect is to reduce the cost of financing its debt and MBS activity, as compared to that of private corporations that do not enjoy such ties.

The first group of characteristics that enhance this perception relates to Fannie Mae's origins and its ties to the Federal Government.

(1) Congress created Fannie Mae by statute to fulfill a public mission.

(2) Fannie Mae is exempt from State and local taxes, except real estate taxes.

(3) Fannie Mae is subject to the regulatory power of HUD.

(4) Under the Charter Act, the Secretary of the Treasury is authorized, in his discretion, to purchase up to $2.25 billion of Fannie Mae debt. This has, however, never been exercised.[5]

(5) All issues of Fannie Mae debt and MBS are subject to the approval of the Treasury.

(6) The President of the United States appoints five of the eighteen members of Fannie Mae's Board of Directors.

A second group derives from numerous Federal statutes and regulations that enhance the perception that Fannie Mae's securities are Federal agency issues, increasing their marketability and reducing their financing costs to close to that of the Treasury. Fannie Mae's securities are:

(1) eligible to be purchased or sold by the Federal Reserve in the conduct of open market operations;

(2) eligible as security for borrowing from the Federal Reserve by member banks;

(3) eligible as collateral for public deposits of the U.S. Government and most State and local governments;

(4) eligible for unlimited investment by national banks and by state banks that are Federal Reserve members;

(5) eligible for unlimited investment by thrifts that are regulated by the FDIC or OTS;

(6) considered government securities for purposes of the Securities Act of 1933 and the Securities Exchange Act of 1934; and, therefore, exempt from SEC registration requirements.

(7) issued and paid through the facilities of the Federal Reserve Banks (fiscal agents). Most Fannie Mae obligations are traded in the book-entry system maintained by the Federal Reserve.

FINANCIAL SAFETY AND SOUNDNESS OF FANNIE MAE

In order to assess the financial safety and soundness of Fannie Mae, the degree of risk involved in the corporation's operations due to such factors as business risk, credit risk, interest rate risk, and management and operations risk, and also its level of capital in relation to its activities, were examined. In addition, the quality and timeliness of information currently available to the Federal Government and the public concerning Fannie Mae's operations and the financial risks associated with such operations were assessed. The results of the analysis follow.

Business Risk

Overview

Business risk is the risk, inherent in all businesses, that management takes in offering a product or service to a market. It is the risk associated with the market as a whole, and the factors affecting the firm's market environment. Fannie Mae is a major participant in the secondary market for housing finance, which, in turn, is influenced by developments in the housing market, primary mortgage markets, and demographic trends.

Over the business cycle, income, housing prices, construction costs, interest rates, and availability of funds are the main determinants of mortgage demand and supply. The net effects of these cyclical influences are reflected in changes in such variables as housing starts and home sales. Over the longer term, changes in the financial system, population growth, household formation, and other demographic factors play a greater role.

Charter limitations on business

Fannie Mae is limited by its charter to dealing with a particular segment of the secondary market for residential mortgages (conforming loans). The limitations relate to the maximum loan amounts, requirements of insurance or other recourse for high loan-to-value (LTV) loans, and requirements that they meet standards of marketability. It is also required by its charter to maintain a market presence.

Although data on the percentage of conforming loans to total residential mortgage originations is not directly available, Fannie Mae has estimated that conforming mortgages represent about 75 percent of single-family originations.

Table 3.

Housing Starts and Home Sales
(Millions of units)

	Starts				Single-family home Sales			
	Total Priv.	growth rate(%)	1-unit	growth rate(%)	New	growth rate(%)	Exist.	growth rate(%)
1978	2.020	1.7	1.433	-1.2	.817	-0.2	3.986	9.2
1979	1.745	-13.6	1.194	-16.7	.709	-13.2	3.827	-4.0
1980	1.292	-26.0	.852	-28.6	.545	-23.1	2.973	-22.3
1981	1.084	-16.1	.705	-17.2	.436	-20.0	2.419	-18.6
1982	1.062	-2.0	.663	-6.1	.412	-5.5	1.990	-17.7
1983	1.703	60.3	1.068	61.1	.623	51.2	2.719	36.6
1984	1.750	2.7	1.084	1.6	.639	2.6	2.868	5.5
1985	1.742	-0.4	1.072	-1.1	.688	7.7	3.214	12.1
1986	1.805	3.6	1.179	10.0	.750	9.0	3.565	10.9
1987	1.621	-10.2	1.146	-2.8	.671	-10.5	3.526	-1.1
1988	1.488	-8.2	1.081	-5.7	.676	0.7	3.594	1.9
1989	1.376	-7.5	1.003	-7.2	.649	-4.0	3.440	-4.3

Source: Census Bureau and National Association of Realtors.

Thus, unlike a diversified financial corporation, Fannie Mae cannot redeploy its assets from the conforming residential mortgage market to the commercial market, or withdraw from mortgage financing when economic conditions point to a higher return in other lines of business.

Home starts and home sales

Historically, activity in residential housing construction has varied substantially over business cycles. For example, in 1972 when the economy was expanding strongly, total private housing starts had hit an all-time peak 2.357 million units, but by 1975, when the economy was in the trough of a recession, starts had fallen by over 50 percent to a 1.160 million rate.

Subsequently, total starts rose strongly, but in the next recession in 1982, they plunged by about 50 percent to only a 1.062 million rate. In the latest expansion, housing starts had recovered to a peak of 1.805 million units in 1986, but have since slid along with the slowing in general economic activity to only 1.376 million units in 1989. (See Table 3.)

The sales of new and existing single-family homes have also varied greatly over the business cycle. Total home sales plunged almost 50 percent from a peak of 4.803 million units in 1978 to only 2.402 million units in 1982. They bounced back to a 4.315 million units by 1986 but, as with starts, they have remained essentially flat or fallen slightly the last two years.

The primary residential mortgage market

At the end of 1989, residential mortgage debt outstanding totaled over $2.4 trillion, and represented about two-thirds of total mortgage debt outstanding. Over 85 percent of residential mortgages outstandings were one- to four-family mortgages, and the remainder multifamily mortgages.

Residential mortgages outstanding grew at an annual rate of 12.0 percent in the 1970s and by 10.2 percent over the 1980s. However, as with starts and sales, there was great year-to-year variation. For example, residential mortgages outstanding increased by $117.8 billion in 1979 but, by 1982, net new activity had fallen by over 70 percent to only $33.0 billion. The net increase in mortgage debt subsequently swelled to $102.3 billion in 1983, and activity steadily picked up through 1989. (See Table 4.)

Although Fannie Mae's business is affected by the rate of home starts and sales and the primary mortgage market, its portfolio balances have not fluctuated by as much as year-to-year origination activity. This is due to the nature of the relationship between starts and sales and mortgage originations and also, especially in the 1980s, to the growth of the secondary mortgage market. Changes in starts and sales affect mortgage originations. However, mortgage originations are not directly related to the changes in mortgages outstanding, because when buyers who are trading up obtain new mortgages, they usually pay down smaller existing loans at the same time. Mortgage originations associated with first-time purchases, however, are more directly tied to increases in outstanding mortgages.

The growth of the secondary market and industry competition

The residential mortgage market has undergone radical changes over the last two decades with the deregulation of depository institutions and the securitization of mortgages. The movement initiated in the 1970s to permit banks and thrifts more flexibility to attract funds by removing restrictions on deposit types and yields they could offer was accelerated by the Depository Institutions Deregulation and Monetary Control Act of 1980, which led to the eventual removal of all interest rate ceilings.

The other major development was the growth of the securitization market for mortgage loans, primarily through the activity (portfolio purchases plus MBS issuance) of Fannie Mae, Freddie Mac, and Ginnie Mae. (See Table 4.) Freddie Mac started offering mortgage-backed securities in 1971, but MBS growth was sluggish until the early 1980s, and Fannie Mae didn't start until 1981. By the end of 1979, Freddie Mac's portfolio and MBS outstanding represented only 2.1 percent of the residential mortgage market. Fannie Mae's comparable portfolio holdings of $51.1 billion at the end of 1979 represented 5.5 percent of residential mortgages. Meanwhile, by the end of 1979 Ginnie Mae guaranteed MBS had grown to $75.8 billion, or 8.1 percent of the market.

While total residential mortgage debt outstanding has grown at a 10.0 percent annual rate over the last ten years, up by more 2 1/2 times from $996 billion at the end of 1979 to $2,421 billion at the end of 1989, Fannie Mae and Freddie Mac's portfolio plus MBS outstanding, plus Ginnie Mae's, have ballooned at a 21.1 percent annual pace, increasing by almost seven times, from $146.3 billion to $991.8 billion.

As a result, the total share of residential mortgage debt held or guaranteed by these three agencies has increased every year since 1970, rising from 5.1 percent at the end of 1970 to 15.7 percent at the end of 1979 and to 41.0 percent at the end of 1989.

The phenomenal growth of the mortgage securitization industry in the 1980s has insulated both Fannie Mae and Freddie Mac from the cyclical vagaries of the residential mortgage market, protecting them from the slowdown in housing and mortgage finance in the early 1980s. More recently, securitization has received an additional boost from the sales of mortgages by S&Ls trying to restructure balance sheets and from the favorable treatment of MBS issued by Fannie Mae and Freddie Mac under the new risk-based capital standards for depository institutions, which assign a 50 percent weight to mortgages but only a 20 percent weight to MBS.

Competition between Freddie Mac and Fannie Mae has grown more intense in recent years. In addition to non-price competition, such as competing with service and product innovation, Freddie Mac has reported that price competition with Fannie Mae has driven down spreads on new business in each of the past two years. Price competition between Freddie Mac and Fannie Mae serves to make the secondary mortgage market more efficient, ultimately benefiting consumers with lower mortgage rates.

Table 4
Total Residential Mortgage Debt, Originations, and Agency Secondary Market Activity

($ billions)

	Total Residential		FNMA+FHLMC+GNMA			GNMA			FHLMC			FNMA		
Year	Outstanding Debt	Originations	Outstanding	% of Res. debt	Purchases	Outstanding	% of Res. debt	Purchases	Outstanding	% of Res. debt	Purchases	Outstanding	% of Res. debt	Purchase
1970	324.4	44.4	16.4	5.1%	5.9	0.3	0.1%	0.5	0.0	0.0%	0.3	16.1	5.0%	5.1
1971	362.9	70.2	22.7	6.3%	7.1	3.1	0.9%	2.7	1.1	0.3%	0.8	18.5	5.1%	3.6
1972	414.2	91.3	28.0	6.8%	7.5	5.5	1.3%	2.5	2.2	0.5%	1.3	20.3	4.9%	3.7
1973	462.2	93.1	35.8	7.7%	10.1	7.9	1.7%	2.7	3.4	0.7%	1.3	24.5	5.3%	6.1
1974	498.3	79.8	46.9	9.4%	13.5	11.8	2.4%	4.3	5.4	1.1%	2.2	29.7	6.0%	7.0
1975	541.0	88.6	56.8	10.5%	13.2	18.3	3.4%	7.2	6.6	1.2%	1.7	31.9	5.9%	4.3
1976	605.2	125.1	70.5	11.6%	17.8	30.6	5.1%	13.1	7.0	1.2%	1.1	32.9	5.4%	3.6
1977	703.9	177.8	89.4	12.7%	25.6	44.9	6.4%	16.7	10.1	1.4%	4.1	34.4	4.9%	4.8
1978	816.0	201.6	112.7	13.8%	33.4	54.3	6.7%	14.6	15.1	1.9%	6.5	43.3	5.3%	12.3
1979	933.8	202.4	146.3	15.7%	40.5	75.8	8.1%	24.0	19.4	2.1%	5.7	51.1	5.5%	10.8
1980	1011.6	146.3	173.2	17.1%	32.0	93.9	9.3%	20.2	22.0	2.2%	3.7	57.3	5.7%	8.1
1981	1067.2	110.3	193.0	18.1%	24.4	105.8	9.9%	13.9	25.1	2.4%	3.7	62.1	5.8%	6.8
1982	1100.2	108.5	252.9	23.0%	68.8	118.9	10.8%	16.0	47.7	4.3%	23.7	86.3	7.8%	29.1
1983	1202.5	223.3	328.6	27.3%	104.4	159.9	13.3%	50.5	65.3	5.4%	23.0	103.4	8.6%	30.9
1984	1374.9	231.3	384.2	27.9%	80.1	180.0	13.1%	27.9	80.4	5.8%	21.9	123.8	9.0%	30.3
1985	1517.4	280.6	479.2	31.6%	135.1	212.1	14.0%	45.9	113.9	7.5%	44.0	153.2	10.1%	45.2
1986	1769.1	502.3	638.9	36.1%	293.1	262.7	14.8%	98.2	182.8	10.3%	103.5	193.4	10.9%	91.4
1987	1997.5	495.4	773.9	38.7%	257.6	315.8	15.8%	97.0	225.6	11.3%	76.8	232.5	11.6%	83.8
1988	2198.8	421.7	857.5	39.0%	178.6	340.5	15.5%	56.5	243.8	11.1%	44.1	273.2	12.4%	78.0
1989	2420.7	388.9	991.8	41.0%	228.4	369.9	15.3%	57.5	294.7	12.2%	78.6	327.2	13.5%	92.3

Source: Ginnie Mae, Freddie Mac, Fannie Mae, and HUD.

Geographical concentration

Geographical concentration can become a major risk factor because a severe economic dislocation in one region can have a serious financial impact, no matter how reliable the underwriting and quality control standards. Therefore, an important method of controlling risk is through geographical diversification. Fannie Mae's portfolio and MBS outstanding are nationally diversified, but the distribution is weighted heavily in a few states, largely because of the regional differences in volume in the primary mortgage origination market. (See Credit Risk Section.)

Demographics

Two important demographic trends are expected over the next decade: slower growth in net household formation and a changing composition of households. Both are related to the aging of the population, or the passing of the "baby boom" generation into middle age.

The aging of the "baby boom" generation into its peak first-time buying years (ages 25-34) in the 1970s induced large and predictable trend increases in housing demand in the 1970s and relatively strong trend increases in demand in the 1980s. However, as Table 5 shows, in the next decade the "baby bust" generation is expected to show up in declining growth rates of the 25 to 34 age group, the peak first-time home buyer group. The results, shown in Table 6, indicate that net household formation is expected to slow from 1.38 million per year in the 1980s to 1.20 million per year in the 1990s.

At the same time, however, the growth of the 35 to 64 year olds will accelerate, resulting in a larger trade-up market. The older group will have a higher per capita income and increased equity, resulting in a rise in the desired quality of homes. In addition, it is forecast that the demand for replacement homes will increase as the stock of homes built prior to World War II (almost 25 percent of the total) continues to age. Thus, move-up demand is expected to combine with increased replacement demand to partially offset the onset of the "baby bust" generation.

Legislative and regulatory changes

Congressional support for the housing market has been strong for longer than Fannie Mae has been in existence. In addition to changes in laws that affect U.S. business in general, because Fannie Mae operates in the national home finance arena, other Federal regulations, as well as State and local laws and regulations, also affect the risks of Fannie Mae's business or

Table 5
Average Annual Changes in Adult Population

(millions)

Age Group	1971-75	1976-80	1981-85	1986-90	1991-95	1996-2000
15-24	0.140	-0.226	-0.463	-0.310	0.055	0.097
25-34	1.229	1.231	0.922	0.338	-0.593	-0.763
35-44	-0.064	0.608	1.194	1.212	0.888	0.315
45-54	0.088	-0.201	-0.031	0.578	1.162	1.185
55-64	0.273	0.343	0.115	-0.195	-0.008	0.567
65+	0.518	0.604	0.565	0.604	0.441	0.224
Total	2.184	2.359	2.303	2.226	1.946	1.625
25+	2.044	2.585	2.766	2.537	1.890	1.528

Source: Bureau of the Census.

Table 6
Net Household Formation by Age Group

(Annual average change, millions)

Age Group	1971-75	1976-80	1981-85	1986-90	1991-95	1996-2000
15-24	0.295	0.147	-0.224	-0.156	-0.074	0.019
25-34	0.651	0.711	0.348	0.230	-0.248	-0.356
35-44	0.010	0.424	0.682	0.766	0.577	0.265
45-54	0.140	-0.052	0.010	0.355	0.700	0.737
55-64	0.095	0.245	0.127	-0.134	-0.005	0.333
65+	0.352	0.457	0.314	0.439	0.299	0.163
Total	1.543	1.931	1.257	1.500	1.249	1.161

Source: Bureau of the Census.

its ability to perform its mission. For example, as is mentioned in the Credit Risk section, the recently implemented risk-based capital guidelines for banks and thrifts discourage those institutions from swapping mortgages with recourse to Fannie Mae for MBS because higher capital is required to be held against MBS with recourse than against MBS without recourse.

Conclusions and recommendations

The explosion in the growth of the mortgage securitization industry has effectively insulated Fannie Mae and Freddie Mac from the cyclical fluctuations in the residential housing and mortgage markets in the last decade. With only roughly one-third of outstanding residential mortgage debt securitized, and a little over half of new originations being securitized, continued growth in mortgage securitization appears likely. However, as the mortgage securitization industry matures and its growth slows vis-a-vis the growth of the mortgage market, Fannie Mae could become more exposed to the cyclical vagaries of the residential mortgage market.

The net impact of the changing demographics to slower household formation, even though per capita income of the aging population is expected to be higher, is expected to slow down the growth of the residential mortgage market in the 1990s. Combined with the growing maturation of the mortgage securitization industry, Fannie Mae is expected to experience slower growth in the 1990s than it experienced in the 1980s.

The expected slowdown in residential mortgage demand is also expected to reduce the pace of overall housing price inflation from that experienced in the 1980s. Housing inflation has the effect of increasing homeowner equity, which reduces the likelihood of default. A slowing in housing price inflation would reduce the rate at which a homeowner builds equity, and, at the margin, may increase the likelihood of default in an economically stressful period.

Congressional support for the housing industry remains strong today as it has been throughout the Corporation's existence. However, other state and local laws or regulatory changes could adversely affect the risk of Fannie Mae's business.

Credit Risk

Overview

Credit risk is the risk of loss due to default. Fannie Mae's exposure to credit risk is the potential loss resulting from a borrower defaulting on a mortgage that Fannie Mae has purchased for its portfolio or guaranteed through MBS. At the end of 1989, Fannie Mae had $110.7 billion of mortgages in its portfolio (including $11.7 billion of MBS) and $228.2 billion in MBS outstanding for net total of $327.2 billion.

Fannie Mae's total exposure to credit loss is mitigated by the amount it recovers from the sale of a property after a borrower has defaulted, and also, if the mortgage was covered by some form of credit enhancement (FHA/VA insurance or guarantees, private mortgage insurance, or recourse to the lender), the amount it recoups from these other sources.

Since Fannie Mae does not originate or service loans, but instead purchases or guarantees existing loans, it has set standards for and monitors the expertise and financial soundness of the lenders that sell or service mortgages, the underwriting process, the quality and types of mortgage products it accepts, the credit qualifications of borrowers, and the valuation of the property.[6] The requirements detail procedures for loan servicing, including delinquency and default management and property acquisition.

Credit risk is also protected against through pricing, holding reserves for expected defaults, monitoring local and regional economic conditions, and maintaining a diversification of products and geographical concentration.

Monitoring and controlling credit risk

Seller/servicer eligibility and performance. Fannie Mae has about 3,000 mortgage lenders who are sellers and servicers. Approximately 2,400 lenders are actively servicing Fannie Mae mortgages, but only about 1,500 sell loans to Fannie Mae in any year. In 1989, mortgage bankers accounted for 51 percent of Fannie Mae's business (portfolio plus MBS), savings and loan associations 38 percent, commercial banks 10 percent, and other institutions (e.g., life insurance companies, credit unions) the remaining 1 percent.

Fannie Mae's lender eligibility criteria include standards addressing financial strength, expertise and experience of principals and staff, operational systems and procedures, and insurance coverage.[7] The standards are geared toward making sure that the mortgage lender is able to meet the obligations contained in its Mortgage Selling and Servicing Contract. This contract references the eligibility criteria the lender must maintain, the warranties the lender makes regarding the quality of each loan, the warranties the lender makes regarding the servicing of each loan, the consequences of warranty breaches (repurchase, indemnification, termination), and the rights of Fannie Mae to terminate the Contract with or without cause.

The servicing standards cover the handling of mortgage payments, escrow administration, delinquency management, foreclosure procedures, property acquisition and management, and other policies to protect the investment.

For example, delinquency management sets out requirements for servicers to analyze each delinquent mortgage, the various collection techniques to be used, special techniques for preventing or curing delinquencies, the relief provisions that are available, and procedures for reporting to Fannie Mae any actions the servicer takes.

Foreclosure policies ensure that the servicer pursues all alternatives to foreclosure, including loan modifications and pre-foreclosure sales that might mitigate loss. If foreclosure is inevitable, the servicing policies require the servicer to take appropriate steps to complete the process as efficiently as possible. If it occurs, the policies outline procedures for acquiring the property and assisting Fannie Mae with its disposition.

Fannie Mae's monitoring of lender performance includes:

(1) Review of the financial condition of all lenders at least once a year, or more often when warranted. It involves analysis of the lender's condition and performance including complete, independently audited, financial statements.

(2) Lender submission of an operations report annually, providing an update of performance relative to the requirements included in the original lender approval process.

(3) On-site reviews by Fannie Mae staff. The reviews focus on eligibility and capability of the lender to originate and service loans. Specifically, they examine the procedures, practices, internal controls, record-keeping systems, and internal and external (to Fannie Mae) reporting systems for originating and servicing loans. Fannie Mae headquarters staff conducts two-week on-site audits of about 50 to 60 lenders per year, while the regional staff conducts 1- to 3-day on-site compliance reviews. Fannie Mae tries to have some form of on-site inspection of about 50 percent of its sellers and servicers every year, so that all are inspected at least once every two

years. Major seller/servicers, however, are reviewed at least once a year, problem accounts more frequently, and smaller accounts less frequently.

(4) Post-purchase review of a sampling of loans delivered by lenders. Sampling is done not only on a random basis for all seller/servicers, but also on a discretionary basis for particular lenders, loan characteristics, or property locations.

(5) Evaluation of loan eligibility and underwriting quality whenever a loan is foreclosed and Fannie Mae acquires the property. If a post-foreclosure (or the post-purchase) review reveals a serious underwriting deficiency, from error or from not adhering to the underwriting standards, Fannie Mae has the option of requiring the lender to repurchase the loan, purchase the property, make Fannie Mae whole if the property has already been sold at a loss, or indemnify Fannie Mae against future loss.

Mortgage product standards. Fannie Mae has established specific eligibility requirements for the types of mortgages it purchases or securitizes. Essentially, the standards are to ensure that the mortgages conform to the requirements of its Charter Act (conforming loans), including that they be of the quality, type, and class to generally meet the purchase standards of private institutional investors. In addition to explicit eligibility standards for the various types of mortgages it is permitted to purchase or securitize, Fannie Mae has issued an extensive set of underwriting standards that reduces its exposure to the risk of default.

Credit standards. Fannie Mae does not originally underwrite the mortgages it purchases or guarantees. Instead, it relies on the network of approved lenders to determine whether or not a particular mortgage or borrower represents an acceptable credit risk. To assist lenders in making this determination, Fannie Mae publishes credit underwriting guidelines and appraisal requirements. The underwriting standards emphasize:

(1) The borrower's ability to meet down payment and closing costs and to repay the debt, including analysis of employment history, income, liabilities, net worth, and certain ratios of necessary expenses to income;

(2) The borrower's willingness to repay the debt, including analysis of credit history;

(3) The sufficiency of the property to secure the debt, including a certified detailed property appraisal based on Fannie Mae's published appraisal standards. Fannie Mae's standards are very clear that the lender has to place as much emphasis on the appraisal as it does on determining the applicant's credit worthiness.

Fannie Mae has an ongoing process to evaluate the risk of its mortgage product and underwriting standards, primarily relying on data on mortgage performance such as delinquency data and default analysis. Analysis is performed on each major product type (18 different products) and on various eligibility and underwriting requirements and changes are made to the underwriting standards from time to time as Fannie Mae deems appropriate.

Credit enhancements. In purchasing conventional loans, Fannie Mae's charter restricts it to loans having a loan-to-value ratio of not more than 80 percent unless a seller retains at least a 10 percent participation; the lender agrees to repurchase the loan in the event of default; or the loan balance in excess of 80 percent is privately insured or guaranteed.

At the end of 1989, Fannie Mae owned or guaranteed the timely payment of principal and interest on a net total of $327.2 billion. Fannie Mae's potential exposure to credit risk, however, is mitigated by credit enhancements (Government guarantees or insurance (FHA/VA), private mortgage insurance (MI), recourse, or collateral). Table 7 shows the share of Fannie Mae's portfolio and MBS at the end of 1989 that benefits from such credit enhancements. (The shares listed with recourse or collateral exclude those loans that are also covered by MI.[8])

Table 7.

Share of Portfolio and MBS with Credit Enhancements
(year-end 1989, percents of UPB*)

	Portfolio	MBS	Total
FHA/VA	14.0%	5.8%	8.2%
MI(all)	23.1	17.5	19.1
Recourse(ex MI)	8.0	20.9	17.1
Collateral(ex MI)	0.0	13.6	9.6
Total	45.1%	57.8%	54.0%

Source: Fannie Mae.
* - Unpaid balance.

MI serves as the primary protection on high loan-to-value loans. MI typically only covers that portion of the loan in excess of 75 percent of the original property value. In order to monitor the long run ability of individual MI companies to pay claims in full, Fannie Mae requires detailed information on a quarterly and annual basis from each MI company. In addition to annual financial reports, Fannie Mae requires quarterly reports on summary breakouts of an MI's new and outstanding business activities by product, LTV, occupancy status, location, and default performance. Fannie Mae also requires copies of all corporate parental support agreements and reinsurance treaties with other insurance companies which have an impact on a company's ability to pay future claims.

The failure of one MI, Ticor Mortgage Insurance Company (TMIC), demonstrated the potential for significant losses when an MI fails. Since 1985, when TMIC started to fail, Fannie Mae has had claims against TMIC for insured losses totaling approximately $105 million. The TMIC liquidator currently expects to pay 70 cents for every dollar of claims, up from a previous estimate of 65 cents. Fannie Mae has allocated losses based on the assumption that it will receive 60 percent of its claim. Based on the liquidator's expectation of a 70 percent payout, Fannie Mae may recoup about $75 million, of which, as of April 1990, it had already received approximately $35 million.

In the commitment process, particularly for MBS, Fannie Mae may negotiate additional recourse (with or without collateral) in order to provide a secondary layer of protection depending on its view of the potential credit risk. Recourse takes the form of an agreement that the seller will repurchase the loan if default occurs, or compensate Fannie Mae for all losses associated with the foreclosure and disposition of a property.

There are two types of recourse agreements: full recourse and limited recourse. Full recourse means that the lenders will buy back any and all loans of a pool that are seriously delinquent, or compensate Fannie Mae for all losses if the loans go into foreclosure. With limited recourse, the lender agrees to cover losses on a pool of loans up to an agreed percentage, typically 10 percent, of the value of the pool. The 10 percent refers not to the portion of loans in the pool that will be covered, but to the portion of actual losses experienced expressed as a percent of the pool. For example, if 20 percent of the loans in a pool defaulted, and the losses were 50 cents on the dollar, Fannie Mae would be fully indemnified if it had a 10 percent recourse agreement. Limited recourse agreements may or may not be backed by collateral. For collateral, Fannie Mae prefers Fannie Mae MBS in book entry form. However, other types of collateral that have been accepted include Ginnie Mae or Fannie Mae MBS in physical form and Treasuries.

Although the major risk with recourse is that the lender may not be able to honor its obligation, Fannie Mae states that it has had virtually no losses from its recourse business.[9] However, with the high incidence of failure in the S&L industry, Fannie Mae has had to transfer the servicing of mortgages, including some that contain recourse, out of failing institutions. In negotiating the sale of a servicing contract to another institution, Fannie Mae tries to also transfer the recourse, but, in some cases, the recourse is not transferred. In those cases, proceeds from the sale of the servicing contract compensate Fannie Mae for the assumption of credit risk.

The incidence of recourse is expected to decline, and Fannie Mae's risk exposure on its MBS is expected to increase, with the recent implementation of the risk-based capital standards for banks and S&Ls. The risk-based regulations will tend to discourage banks and thrift institutions from selling or swapping mortgages to Fannie Mae that involve recourse as a credit enhancement, since the new standards require the institutions to maintain the same capital level against MBS backed by recourse as would be required against whole mortgages. This is already evidenced by the percentage of Fannie Mae "lender risk" MBS issued in 1989, which fell to 34.3 percent from 47.3 percent in 1988 and from 60.8 percent in 1987.

Market evaluations. Property location is often one of the most significant factors that causes losses as a result of default and foreclosure. Local and regional economic conditions influence employment levels, employment growth, and housing supply and demand. All of these factors determine housing value trends. Severe economic dislocation in one region can have a serious financial impact, no matter how reliable the underwriting and quality control standards. Therefore, an important method of controlling credit risk is through geographic diversification.

Because of the critical nature of the market conditions, Fannie Mae monitors loan performance on an ongoing basis in its 56 largest market areas. For each area, the information includes delinquency rates, unemployment rates, Fannie Mae's recent and total volume (portfolio purchase and MBS issuances), and loan-to-value ratios. Delinquency rates are monitored by product type, year of origination, loan-to-value ratio, and occupancy status.

Measuring credit risk exposure

Geographical distribution. Fannie Mae's portfolio and MBS outstanding are regionally diversified, but the distribution is weighted heavily, largely because of the regional differences in originations. At the end of 1989, Fannie Mae had $327.2 billion in portfolio holdings and MBS outstanding. About 25 percent of that volume was concentrated in California and 50 percent in five states, as shown in Table 8.

HUD data on originations for 1980 to 1988 (latest data available) are used as a proxy for the comparison of Fannie Mae's outstanding balances to national activity by all mortgage lenders. The distribution of Fannie Mae's mortgages outstanding approximate the data on HUD originations for all states, but Fannie Mae's concentration in the top five States is significantly higher.

Table 8.

Geographical Distribution of Fannie Mae's Conventional Portfolio and MBS Outstanding at the end of 1989 and HUD National Mortgage Originations 1980-1988. (conventional single-family loans)

	Fannie Mae			HUD
	MBS outst.	Port. outst.	Total	Orig. 80-88
California	25.3%	26.4%	25.6%	21.7%
New York	6.9	7.4	7.1	5.5
Florida	7.0	4.8	6.4	5.1
New Jersey	5.7	4.8	5.4	3.9
Texas	4.0	7.3	5.0	6.6
Total(5 States)	48.9	50.7	49.5	42.8
All other states	51.1	49.3	50.5	57.2

Source: Fannie Mae. HUD-No. 88-111, "Survey of Mortgage Lending Activity: State Estimates 1978-1988."

Portfolio characteristics related to credit risk. Fannie Mae does not have complete historical loan-level data on all mortgages outstanding in its portfolio prior to 1987, or for its MBS outstanding prior to 1989.[10] Thus, it was unable to produce complete historical data on the composition of its portfolio or MBS outstanding broken out by characteristics related to risk performance, such as defaults as a percent of holdings by LTV distribution. However, it does have historical loan-level data on gross purchases made each year for portfolio and gross MBS issued, and data on liquidations and defaults for a subset of its portfolio.

Since the revision of its underwriting standards in 1985, the distribution of Fannie Mae's purchases of single-family conventional loans for its portfolio has shifted away from the highest, most risky, LTV category (over 90 percent). (See Table 9.[11]) In 1985, more than 8 percent of its single-family fixed-rate mortgage purchases, and over a third of its single-family ARM purchases, had LTV ratios at purchase of over 90 percent. Since then, the total portion of single-family fixed-rate and ARM purchases with LTVs of over 90 percent has fallen to under 4 percent.

The composition of its MBS issued since 1985 has moved in the same direction, resulting in a decreased percent of high LTV

Table 9

Fannie Mae Portfolio Purchases and MBS Issued For Single-family Conventional Loans

($ millions)

For the year:	1985	1986	1987	1988	1989	Outstanding As of 12/31/89 ($ billions)
Portfolio*						
Conventional Mortgages:						
Fixed-rate	13,269.0	27,952.0	15,914.0	12,323.0	15,525.0	57.2
ARMs	7,066.0	1,108.0	2,512.0	9,862.0	4,492.0	20.2
Total	20,335.0	29,060.0	18,426.0	22,185.0	20,017.0	77.4
Original LTV distribution (%):						
Fixed-rate:						
0 to 80%	78.5	84.6	85.2	82.3	82.7	76.2
81 to 90%	13.3	11.9	11.1	13.6	14.0	15.2
Over 90%	8.2	3.5	3.7	4.1	3.3	8.6
ARMs:						
0 to 80%	40.5	61.0	66.9	65.4	68.7	58.1
81 to 90%	23.8	30.1	29.7	32.5	30.0	28.4
Over 90%	35.7	8.9	3.4	2.1	1.3	13.5
Mortgage-Backed Securities						
Conventional Mortgages:						
Fixed-rate	18,913.0	43,089.0	50,704.0	32,144.0	51,845.0	167.8
ARMs	3,670.0	6,197.0	7,969.0	18,407.0	13,501.0	40.4
Total	22,583.0	49,286.0	58,673.0	50,551.0	65,346.0	208.2
Original LTV distribution (%):						
Fixed-rate:						
0 to 80%	72.5	79.6	79.4	76.9	77.9	77.2
81 to 90%	14.2	14.9	15.9	17.2	16.4	16.6
Over 90%	13.3	5.9	4.7	6.0	5.7	6.2
ARMs:						
0 to 80%	84.4	85.3	84.1	66.4	74.5	72.4
81 to 90%	14.4	12.6	15.2	31.8	23.9	26.0
Over 90%	1.2	2.1	0.7	1.8	1.6	1.6

*Includes purchases of Fannie Mae MBS.

Source: Fannie Mae.

loans. The percent of high LTV single-family MBS issued has fallen from 13 percent in 1985 to under 6 percent in 1989 for fixed-rate and has remained relatively flat, at between 1 and 2 percent for ARMs.

Serious delinquency and in foreclosure rates. Serious delinquencies are defined as loans on which payment is 90 days or more past due. Foreclosure is a legal procedure in which a mortgaged property is repossessed due to a borrower's default. The time it takes to complete the foreclosure averages about 12 to 18 months, and at any point in time there are a number of loans in the foreclosure pipeline. Once the process is completed, Fannie Mae records the loan as having defaulted, with the timing of the default recorded as the date the last monthly installment payment was made by the borrower, but with the loss deducted after settlement on the foreclosed property.

In the early 1980s, Fannie Mae purchased large volumes of ARMs as a means of matching asset/liability yields. In 1984 and 1985, ARMs constituted over one-third of its purchases for portfolio and about 20 percent of its MBS issued. A number of the ARMs purchased had "teaser rates", that is, the interest rate for the first year was 200 to 300 or more basis points below what the rate would have been if the full rate (indexed rate plus margin) had been charged.[1] Thus, borrowers who could afford monthly payments at the much lower initial interest rate experienced financial strain when the fully indexed rate went into effect, whether or not market rates had increased in the interim. Teaser rate ARMs have thus experienced higher default rates because of the payment shock when the ARM becomes fully indexed. In response to this, Fannie Mae changed its underwriting standards in early 1987 to require borrowers applying for an ARM to qualify at the fully indexed rate.

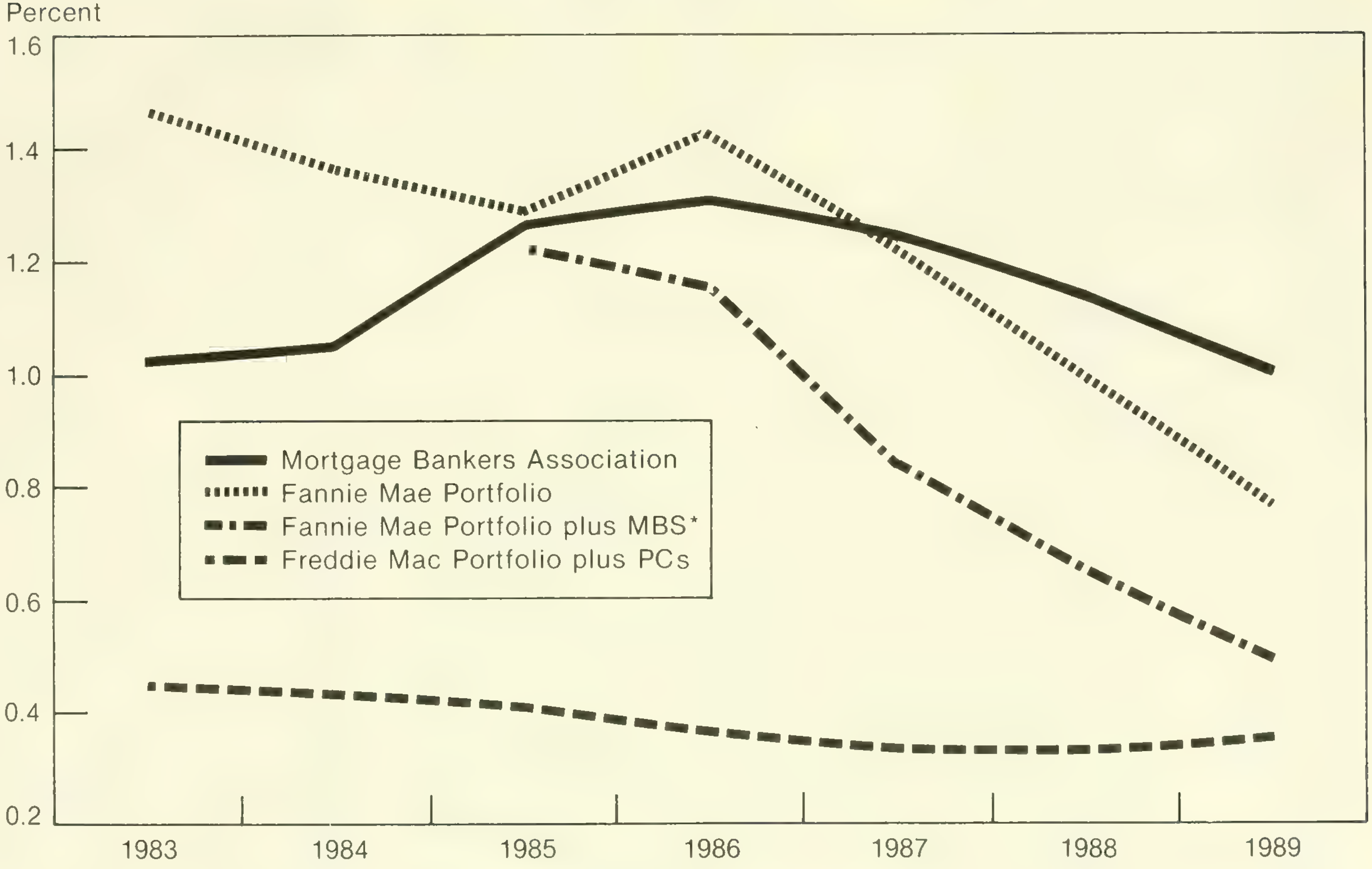
ARMs are more sensitive than fixed-rate mortgages to delinquency and default for two additional reasons. First, in increasing interest rate environments the index on the ARM increases at set intervals by prescribed amounts, raising the monthly mortgage payment. Thus, ARMs have a greater likelihood of default than fixed-rate mortgages in high or rising interest rate environments. Second, the distribution of the LTV ratios of ARMs held by Fannie Mae is weighted more heavily toward the higher (over 80 percent) LTV categories, which historically have had a higher incidence of delinquency and default than lower LTV loans.

As shown in Table 10 and Chart 1, serious delinquencies and in foreclosure rates (based on number of loans) in the early 1980s for Fannie Mae's portfolio were about three times those of Freddie Mac's and about 45 percent higher than those of mortgage bankers.[2] Fannie Mae's serious delinquency and in foreclosure rates remained relatively high through 1986, the year after

Chart 1

Serious Delinquency Plus In Foreclosure Rates on Single-family Conventional Mortgages

(Fourth-quarter rates)



*Data on Fannie Mae's MBS not available prior to 1985.

Source: Federal National Mortgage Association, Federal Home Loan Mortgage Corporation and Mortgage Bankers Association.

which it revised its underwriting standards, and has been trending downward since then. For 1989, Fannie Mae's serious delinquency and in foreclosure rate for its own portfolio stood at 77 percent of that of the mortgage bankers, but still more than twice that of Freddie Mac's.

Fannie Mae states the reason for its higher delinquency and in foreclosure rates is that it is still holds a large number of loans purchased prior to the tightening of its underwriting standards in 1985. For example, Fannie Mae indicates that the serious delinquency rate two years after origination on loans originated in 1985 was 2.3 percent, but was less than .4 percent two years origination for loans that were originated in 1986 and 1987.

Table 10.

Serious Delinquency and In Foreclosure Rates
(percents)

	Fannie Mae			Freddie Mac	Mortgage Bankers
	Portfolio	MBS	Total		
1983	1.48	n.a.	n.a.	0.46	1.03
1984	1.36	n.a.	n.a.	0.44	1.06
1985	1.29	0.84	1.22	0.41	1.27
1986	1.44	0.57	1.17	0.37	1.31
1987	1.24	0.42	0.86	0.34	1.25
1988	0.95	0.38	0.66	0.34	1.14
1989	0.77	0.28	0.50	0.34	1.00

Source: Fannie Mae, Freddie Mac, Mortgage Bankers Association.
n.a. - not available.

Real estate owned (REO). Once a mortgage has passed through the foreclosure process, Fannie Mae takes title to the property. It tries to manage the sale of the property quickly and efficiently to minimize costs associated with holding the property and to recoup as much of its original investment as possible.

At the end of 1989, Fannie Mae had 4,975 properties in inventory, down from a peak of 9,434 in 1987. (See Table 11.) Between 1984 and 1987, an increasing number of properties were added to REO each year, with additions outstripping disposals. Since 1987, however, the number of properties added each year has been declining, and Fannie Mae has also sold more properties than it has acquired. As with serious delinquencies and foreclosures, Fannie Mae's REO experience has improved for loans purchased since the tightening of its underwriting standards in 1985. Most of the properties Fannie Mae has acquired in recent years are from loans made prior to the revisions. Almost 70 percent of the REO acquired in 1988 and 64 percent of REO acquired in 1989 were from loans purchased in 1982-1985, while about 6 percent and 15 percent, respectively, were from loans purchased since 1985.

Table 11.

Fannie Mae Real Estate Owned

	Beginning Balance	Real Est. Acquired	Real Est. Disposed	Ending Balance	End of yr. net value* ($millions)
1984	3,346	5,784	3,065	5,737	$247,201
1985	5,737	10,689	8,051	8,375	297,564
1986	8,375	13,545	12,684	9,236	294,287
1987	9,236	16,676	16,478	9,434	311,672
1988	9,434	15,263	17,239	7,458	249,744
1989	7,458	10,948	13,431	4,975	171,849

Source: Fannie Mae.
* - net realizable value.

Reserves for losses and loss charge-offs. Fannie Mae sets aside reserves for losses on its conventional mortgage portfolio and MBS business. (See Table 12.) The provision for losses on the conventional portfolio is maintained at a level that, in management's judgement, is adequate to provide for estimated losses. This judgement is based on such factors as economic conditions, geographic concentrations, mortgage characteristics, and actual loan loss experience. The allowance is increased by provisions and decreased by charge-offs, net of recoveries.

Fannie Mae's current policy is to allocate for losses based upon different rates applied to its various mortgage products at the time of purchase. An amount equal to the rate times the principal balance (at the time of purchase) is set aside at the time of purchase. It also makes supplementary loss provisions based on other factors to bring the total allowance up to levels deemed appropriate by management. A separate rule is followed with regard to Government insured or guaranteed loans, where a provision for losses is made when foreclosure appears probable. At that time, the provision is recorded to provide for estimated unreimbursible foreclosure losses.

A liability for estimated losses is also maintained for non-recourse MBS because Fannie Mae has assumed the ultimate foreclosure risk on the underlying mortgages. Fannie Mae estimates and provides for the losses at the time of issuance of

Table 12
Loan Loss Provisions, Charge–offs, and Balances

($ millions)

	Portfolio					MBS					Total				
	Provision	Charge– Off	Ending Balance	Portfolio* ($bil)	Charge– off % of Portfolio	Provision	Charge– Off	Ending Balance	MBS* ($bil)	Charge– off % of Total	Provision	Charge– Off	Ending Balance	Portfolio & MBS* ($bil)	Charge– off % of Total
1979			127					0							
1980	18	6	139	52.7	0.01	0	0	0	0.0	0.00	18	6	139	52.7	0.01
1981	–29	5	105	83.4	0.01	1	0	1	0.4	0.00	–28	5	106	83.8	0.01
1982	33	6	132	66.6	0.01	4	0	5	7.6	0.00	37	6	137	74.2	0.01
1983	37	43	126	75.1	0.06	11	0	16	19.8	0.00	48	43	142	94.9	0.05
1984	80	96	110	83.2	0.12	6	2	20	30.7	0.01	86	98	130	113.9	0.09
1985	174	151	133	93.4	0.16	32	19	33	45.6	0.04	206	170	166	139.0	0.12
1986	251	192	192	98.2	0.20	55	9	79	76.1	0.01	306	201	271	174.3	0.12
1987	265	242	215	97.3	0.25	95	43	131	118.6	0.04	360	285	346	215.9	0.13
1988	259	228	246	99.9	0.23	106	87	150	159.1	0.05	365	315	396	259.0	0.12
1989	144	157	233	106.9	0.15	166	86	230	203.2	0.04	310	243	463	310.1	0.08

*Average of beginning and ending year balances.

Source: Fannie Mae.

MBS based on the same rates it uses for the products in its own portfolio.

During 1988, charge-offs on portfolio and MBS hit a peak of $315 million, compared with $285 million in 1987 and $244 million in 1989. Fannie Mae's overall loan loss provision policy (portfolio plus MBS) appears adequate in the sense that charge-offs for any year in the last five have ranged between 66 percent and 86 percent of loss provisions for the year, and have not exceeded loss provisions in any year. (See Table 12.) However, in 1989, charge-offs for portfolio losses exceeded the provision made.

Pricing for credit risk

Fannie Mae's basic goal in pricing for credit risk is to charge a large enough fee on its MBS, or yield margin on its portfolio purchases, to cover losses on defaults or reduced returns on prepayments and still achieve its return on capital. Credit risk pricing is designed to produce -- for any type of mortgage and for any set of risk characteristics -- a recommended initial capital allocation and yield or guarantee fee such that if defaults and prepayments occur as Fannie Mae expects they will, Fannie will earn its target return on capital. If defaults and prepayments are extremely adverse, Fannie Mae's goal is to still have sufficient guarantee fees or yield income and capital to withstand the adversity.

The major analytical tool for measuring credit risk is a credit pricing simulation model. The model randomly simulates various home price, mortgagor income, and interest rate environments. It generates the default and prepayment behavior of a mortgage pool with particular characteristics in the alternative economic scenarios, and projects a pool's cash inflows (principally guarantee fees and float income) and outflows (losses and administrative expenses) under the alternative scenarios. The results are used to determine the fee income that is expected to provide the required return on capital.

In addition to generating the guarantee fee that Fannie Mae needs to charge to earn its target return, the credit pricing model provides frequency distributions for mortgage default rates and patterns of default through time, mortgage prepayment rates and patterns, and required loan loss reserves. Key mortgage characteristics that significantly influence credit risk in the credit pricing model include: LTV ratios, payment shock (as measured by the change in a mortgagor's payment-to-income ratio), owner-occupancy status, loan seasoning (i.e., age), property type (e.g., number of units), and the differential between initial mortgage rates and projected future mortgage rates.

The model can also provide Fannie Mae with the maximum stress default rates (for specified loss severities associated with default) that any pool of mortgages will likely withstand, given its risk characteristics, guarantee fee, and an initial capital level allocated to pool. The level of initial capital can be adjusted by the user to determine the level that would be required to withstand various adverse scenarios and still remain solvent. This feature of the model is used in Fannie Mae's credit risk stress test, the results of which provided an underpinning for its capital adequacy analysis.

Fannie Mae's credit stress test

Fannie Mae employs a stress test for all its mortgages based on its past experience with 30-year fixed-rate single-family mortgages originated in 1981 and 1982 in Texas for which the firm has loan level detail. Table 13 presents the default rates for the 1981-1982 Texas 30-year fixed-rate mortgages, both the actual rates as of September 30, 1989 and the projected ultimate lifetime rates. The failure rates shown in Table 13 are the simple arithmetic averages of the rates for the two individual years.

Table 13.

Default Rates, 1981/82 Texas 30-yr Fixed Rate Loans

	Original Loan-to-value Categories (%)					
	>90	>80≤90	>75≤80	>70≤75	>60≤70	≤60
Actual (through 9/30/89)	25.4%	14.2%	9.0%	3.8%	1.9%	0.8%
Projected Lifetime	28.0%	16.0%	10.0%	4.5%	2.2%	0.8%

Source: Fannie Mae.

Fannie Mae believes that the Texas experience in the 1980s is unlikely to be repeated in other regions of the country because of the dependence of that state on a single industry -- oil. According to Fannie Mae, a region with a more diversified economy is unlikely to experience as many foreclosures as Texas or have the same degree of loss severity. Fannie Mae concludes that the Texas scenario, applied on a nationwide basis, is a very adverse set of economic circumstances that is substantially worse than nationwide experience in the post-World War II era.

Fannie Mae has applied the projected lifetime default rates of its Texas 1981-1982 loans to the LTV profile of 30-year fixed-rate, unseasoned (0-30 months) mortgages in its current portfolio to compute a weighted average default rate, which is approximately 9 percent. Given the lifetime average default rate and an assumed initial capital level allocated to its 30-year unseasoned fixed-rate loans, Fannie Mae's credit pricing model is used to project the impact on capital of the cash inflows and outflows associated with the adverse scenario. The model estimates a pattern of defaults that mimics the estimated Texas lifetime experience, and the associated fee income, float income, earnings on capital, administrative costs, taxes, and dividends.

All other loan types (including seasoned 30-year fixed-rate loans) are assumed to default at rates that are multiples of the unseasoned 30-year fixed rate default rates. The product multiples used -- 1.4 for ARMs, 0.8 for intermediate term loans, 2.0 for second mortgages, and 3.0 for multifamily loans -- are based on analyses done by Fannie Mae using data more recent than 1981-1982. Fannie Mae states that the reason for applying multiples to the default rates of its unseasoned 30-year fixed-rate loans to represent the default rates on other products is that it has little or no 1981-1982 Texas data on these other loan types.

Fannie Mae also applies a factor to account for seasoning. Any loan type seasoned more than five years is deemed to have a failure rate one-half that of an unseasoned (0-60 month) loan of that same type.

For all owner-occupied, single-family loans, the loss severity associated with a default is calculated, based on an assumed sales price of foreclosed property that is 72 percent of the property's original appraised value. This figure is based on an analysis of Fannie Mae's experience with the properties that secured 1981-1982 Texas fixed-rate mortgages. Fannie Mae applies a further stress (a multiple of 1.5) on all loans that are investor-owned rather than owner-occupied, and on loans that are made on condominiums and 2- to 4-unit properties rather than single-family properties.

Finally, the existence of credit enhancement, in the form of recourse, recourse with collateral, or FHA or VA insurance, does not affect the default rates in Fannie Mae's stress test, but it does affect loss severities. Fannie Mae reduces the projected loss severities on FHA/VA loans by 90 percent, on collateralized loans by 80 percent, and on recourse loans by 60 percent.

According to Fannie Mae, given its current book of portfolio loans and MBS, Fannie Mae currently would require capital (defined as equity plus loan loss reserves) of approximately 74 basis points (or leverage of 135:1) to withstand default rates and loss severities on its entire book of nonrecourse business -- portfolio plus MBS, from all states and in all years -- comparable to what Fannie Mae experienced on its 30-year fixed-rate loans originated in 1981 and 1982 in Texas. For loans and MBS with recourse, collateral, or FHA/VA insurance, Fannie Mae states that its proposed capital of 40 basis points (or leverage of 250:1) is substantially in excess of what is required to withstand a nationwide occurrence of the 1981-1982 Texas loan experience.[14]

Assessment of Fannie Mae credit risk stress test. Fannie Mae's credit pricing model was employed for its capital adequacy stress test. Fannie Mae ran the model on its unseasoned 30-year fixed-rate mortgages. The model was not run with data on the other portions of Fannie Mae's portfolio and MBS because Fannie Mae does not have sufficient historical data on the other products. Instead, the multiples described above were used to approximate the default behavior of the other mortgage products, and a weighted average default rate for Fannie Mae's total nonrecourse business was derived.

In Fannie Mae's computations for its required capital ratio for credit risk of 74 basis points (135:1) for its entire book of nonrecourse business, Fannie Mae employed a capital ratio of 80 basis points (125:1) for its unseasoned 30-year fixed-rate mortgages. Fannie Mae applied the weighted average default rate of its Texas experience to this subset of mortgages, using its credit pricing model to generate over the life of the mortgages the pattern of income and expenses determined by the default and prepayment performance of the mortgages. The timing of the pattern of defaults and prepayments is important because if the amount of capital allocated can weather the period of time in which loss expenses are peaking, then it will likely be sufficient for the life of the mortgages.

On the assumption that the pattern of defaults and prepayments of its other mortgage products during the stress scenario is similar to that of its unseasoned 30-year fixed-rate loans, the weighted average default rate for Fannie Mae's total nonrecourse business was used in its credit pricing model to derive an estimate of the required level of capital to withstand the stressful environment.

The behavioral and structural parameters of Fannie Mae's credit pricing model are based only on recent experience, which has been normal. It is reasonable to assume that a stressful scenario of national proportions would alter both the behavioral (for example, homeowners might become more inclined to simply walk away from obligations) and the structural or institutional relationships in the economy. In addition, by running the credit pricing model on its 30-year fixed rate mortgages, but with a weighted default rate to represent the performance of other products, Fannie Mae has extended those same behavioral and structural relationships to apply to its other mortgage products, for which it has little historical data.

The sensitivity of Fannie Mae's stress test to changes in the underlying assumptions, and appropriateness of it as the underpinning of its capital adequacy guidelines is examined in the capital section of this study. There, it is demonstrated that the results are sensitive to changes in the underlying assumptions related to its 1981-1982 Texas experience for its 30-year fixed-rate loans. Also, the capital ratio derived based on its Texas experience for its basic book of 30-year fixed-rate loans leaves little cushion for a future experience that might be only marginally more severe.

Conclusions and recommendations

Fannie Mae revised its underwriting standards in 1985, and has set up stringent requirements and monitoring procedures for seller/servicer management, product quality, and borrower qualifications. The underwriting criteria of both Fannie Mae and Freddie Mac are the industry standards.

Since 1985, Fannie Mae's delinquency and foreclosure rates on its portfolio have declined significantly, and are now below those of mortgage bankers, but remain well above Freddie Mac's. Fannie Mae states this is because it still retains a large number of loans from the early 1980s, when it was buying ARMs in volume. Fannie Mae's delinquency and in foreclosure rates on its MBS, however, are comparable to Freddie Mac's.

The biggest credit risk to Fannie Mae (and Freddie Mac) is a regional or national economic slowdown. About 25 percent of Fannie Mae's activity is concentrated in California and about 50 percent in five states. Its charter requires it to maintain a presence in the market. If severe economic dislocation occurs, its default experience will increase significantly, and its ability to price credit risk accurately will also be impaired. In addition, Fannie Mae's links to the Federal Government may induce and permit management to assume credit risk that would not otherwise be undertaken.

Home prices have been soft in the northeast for two years, and recent evidence suggests that similar softness is developing in other parts of the country, especially the west. While both Fannie Mae and Freddie Mac have benefitted from the high rate of inflation in house prices in the 1980s, which has increased homeowner equity and reduced the risks of default on many outstanding mortgages, a slowing in home price inflation, or actual price decreases, which are already showing up regionally, will impact Fannie Mae's credit risk exposure.

Fannie Mae uses its Texas experience in the early 1980s as the basis for its credit risk stress test. Preliminary sensitivity analysis of the stress test, which is discussed in the capital section, suggests that the model Fannie Mae uses to run its stress test is very sensitive to critical loss assumptions related to its Texas experience. Running the model with alternative loss assumptions that closely resemble certain elements of Fannie Mae's recent experience, which is not particularly stressful, indicates that the capital ratio that Fannie Mae applies to the unseasoned 30-year fixed-rate portion of its business (80 basis points) is inadequate.

More importantly, as discussed in the capital section, while a stress test may be a good management tool for assessing credit risk exposure of the current book of business, or for pricing credit risk at the margin, it is not the only criterion to consider in deriving a standard for capital adequacy.

Interest Rate Risk

Overview

Interest rate risk occurs when the values of a firm's assets and liabilities react differently to changes in interest rates. Fannie Mae's primary exposure to interest rate risk is determined by the size of its on-balance sheet portfolio and how that portfolio is financed. To a lesser extent, Fannie Mae is exposed to interest rate risk on its MBS.

Fannie Mae's mortgage portfolio totaled $110.7 billion at the end of 1989. Between 1980 and 1985, it had grown at an 11.5 percent annual rate, from $57.3 billion in 1980 to $98.6 billion. Its level remained little changed over 1986 and 1987, but over the last two years, it has grown at a 7.0 percent annual rate.

Fannie Mae also has $228.2 billion of MBS outstanding; however, interest rate risk on MBS is primarily assumed by investors holding the MBS. Nonetheless, to the extent that the market value of its guarantee fees on its MBS varies when interest rates change, Fannie Mae is exposed to interest rate risk on its MBS business.

In the early 1980s, Fannie Mae suffered large losses on its portfolio as a result of the surge in interest rates to historically high levels. (See Table 14 and Chart 2.) Over the 1981-1982 period, net interest losses averaged more than $1.3 million per day.[15]

The losses incurred by Fannie Mae's portfolio in the early 1980s were the result of an asset/liability strategy followed in the 1960s and 1970s that involved financing long-term mortgage assets with relatively short-term noncallable debt.[16] When interest rates increased, Fannie Mae's debt repriced more rapidly than its assets, lifting the cost of its debt to far above that of the earnings on its assets.

Monitoring and controlling interest rate risk

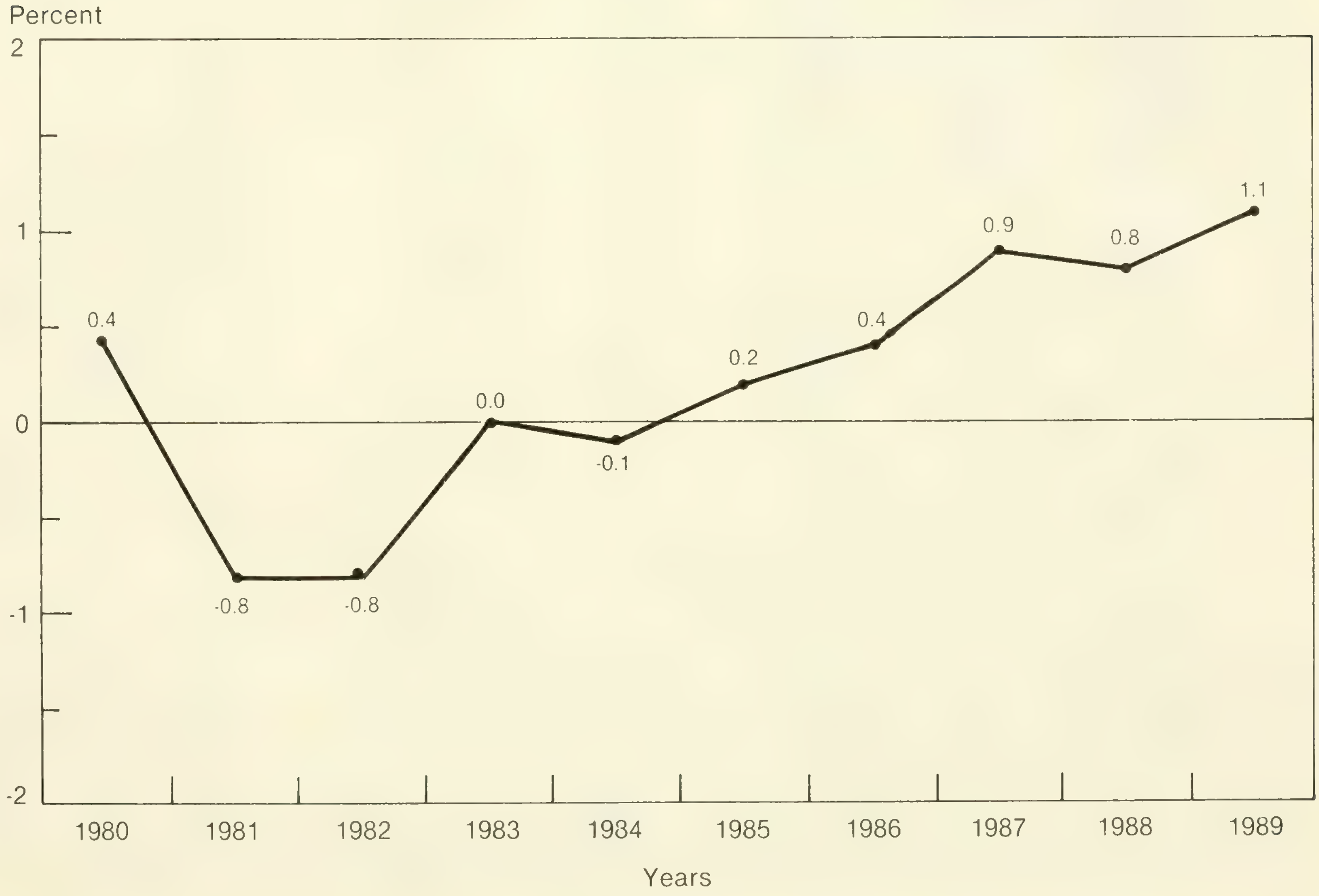
In the aftermath of its losses in the early 1980s, Fannie Mae adopted an asset/liability management goal of matching the interest rate sensitivities of its mortgage assets and the liabilities used to fund its mortgage assets. The rationale underlying the goal was to have the earnings on its assets and the cost of its debt move more closely together when interest rates change, thereby stabilizing its net interest margin.

However, even if interest rate sensitivities of assets and liabilities are similar at a given level of interest rates, for

Chart 2

Fannie Mae's Net Interest Margin

Net Interest Income/Average Earning Assets



Source: Fannie Mae

Table 14.
Fannie Mae Net Interest Income
($ millions)

	Interest Income	Interest Expense	Net Interest Income	Net Interest Margin
1980	$4,945	$4,924	$21	.039%
1981	5,534	5,997	(463)	(.799)
1982	6,821	7,327	(506)	(.770)
1983	7,980	7,989	(9)	(.012)
1984	8,906	8,996	(90)	(.109)
1985	$10,065	$9,926	$139	.152%
1986	10,107	9,723	384	.400
1987	9,843	8,953	890	.935
1988	10,226	9,389	837	.793
1989	11,080	9,889	1,191	1.059

Source: Fannie Mae.

movements in interest rates from that level, the sensitivities of assets and liabilities generally diverge. Fannie Mae attempts to reduce the divergence by trying to match the interest sensitivities of its assets and liabilities over different interest rate scenarios.

Duration matching. Duration is a measure of the weighted average life of the cash flows of a security. It is related to the concept of maturity, but, unlike maturity, duration accounts for the timing and amounts of all the cash flows. The weights are the present values of the cash flows of the security. Portfolio duration is the weighted average duration of the individual securities in a portfolio.

Duration can also be used as a measure of the sensitivity (or elasticity) of the value of a security or a portfolio to changes in interest rates.[17] Thus, matching the durations of assets and liabilities is equivalent to matching the interest rate sensitivities of the values of assets and liabilities to small changes in interest rates.

On the asset side, in the early and mid 1980s Fannie Mae purchased large volumes of the relatively new ARMs which, because of their variable rate feature, had much shorter durations than their fixed-rate counterparts.[18] ARMs accounted for about 40 percent of Fannie Mae's purchases in 1982 and 1983, and for about

Table 15.

Fannie Mae Duration Gap
(months)

	Duration		
	Mortgage Assets	Liabilities Funding Mtgs.	Duration Gap
1980	62	26	36
1981	59	24	35
1982	55	21	34
1983	54	22	32
1984	52	23	29
1985	48	30	18
1986	47	36	11
1987	47	39	8
1988	46	36	10
1989	46	40	6

Source: Fannie Mae.

Duration of assets is computed on the unpaid balance of mortgage assets outstanding less unamortized purchase discount and fees. Duration of liabilities used to fund mortgages is total debt outstanding less Fannie Mae's liquidity and investment portfolio.

34 percent of its purchases in the following two years. (See Table 9 in Credit Risk.) As a result, the share of ARMs in the portfolio rose from 2 percent at the end of 1982 to 17 percent by the end of 1985. Over the same period, the duration of Fannie Mae's mortgage assets fell from 62 months to 48 months, and has remained just below that since. (See Table 15.)

On the liability side, Fannie Mae extended duration by lengthening the weighted average maturity of the debt it uses to fund mortgages.[19] In 1982, Fannie Mae's debt outstanding had a duration of only 21 months. (See Table 15.) By 1985, and duration of the debt had risen to 30 months. (The primary reason for the increase is the weighted average maturity of its debt rose from 31 months to 40 months.)

By the end of 1989, the duration of Fannie Mae's liabilities had risen to 40 months, and the duration gap had shrunk to 6 months. Having a duration gap of 6 months means that Fannie Mae is somewhat sensitive to rising interest rates. However, Fannie Mae believes, given the current configuration of its assets and liabilities, it can achieve the best stability in its net interest margin through having the duration of its mortgage assets about 6 to 9 months longer than the durations of the liabilities used to fund its mortgages.

Fannie Mae states that the reason for the targeted difference is related to the prepayment option of mortgages versus the noncallability of most of its debt. When interest rates increase, prepayments tend to decline and the duration of mortgages increases, widening Fannie Mae's duration gap and exposing it to more interest rate risk. On the other hand, when interest rates decline, mortgage prepayments tend to increase, lowering the duration of mortgage assets. The increased prepayments in decreasing interest rate environments means that Fannie Mae's assets will reprice more quickly at the lower rates. If there is no call provision or variable-rate feature on outstanding debt, the cost of debt will not decrease commensurately. Because prepayments accelerate more quickly in response to falling interest rates than they decelerate in response to rising interest rates, Fannie Mae feels that a slightly positive duration gap is, in most cases, desirable. Fannie Mae has stated that as it adds more callable debt to its balance sheet, its targeted duration gap should move closer to zero.

Convexity. Having achieved its targeted duration gap, the focus of Fannie Mae's current interest rate strategy is to maintain stability in the gap (and thus in its net interest margin) in different interest rate environments. The term "duration drift" is used to describe the widening of the duration gap when interest rates change. A more accurate description of this phenomenon uses the concept of convexity. The relationship between changes in interest rates and the value of an asset (or liability) is not linear but curved.[20] The rate at which the values of the durations of assets and liabilities change with respect to changing interest rates depends on how the weighted average payment streams are altered by the interest rate movements.

The result of a convexity mismatch is that sizable interest rate changes will cause the values of the durations of assets and liabilities to diverge significantly, increasing exposure to interest rate risk. Thus portfolios that have a sizable positive duration gap or convexity gap (or both as Fannie Mae did in the early 1980s) will experience a decline in profitability and net market value when interest rates rise significantly.

Since the middle of 1988, Fannie Mae has reduced the potential for disparity in the interest rate sensitivities of its assets and liabilities by issuing more callable debt and indexed sinking fund debentures (ISFDs). ISFDs are unsecured general obligation debt with a call structure that allows the maturity to extend when rates rise and to shorten when rates fall, creating a prepayment pattern similar to mortgage loans. Fannie Mae offers ISFDs with final maturities of 5 and 10 years. For example, for a 10-year ISFD, interest-only payments are made semi-annually for the first four years, and after that, principal and interest payments are paid. But the amount of principal paid is indexed by how Treasuries have moved since issuance of the ISFD. When rates have risen, principal is paid more slowly; when rates have fallen, principal is paid more rapidly.

As shown in Table 16, Fannie Mae has increased significantly the issuance of debentures that includes callable or ISFD features since the middle of 1988. Debt with such features constituted 27 percent of its term offerings in the second half of 1988, 25 percent for all of 1989, and 63 percent for the first quarter of 1990.

Table 16.

Fannie Mae Term Debentures Issued*
($ millions)

	Total Debentures Issued	ISFD Issued	Callable Debt Issued
1988			
3rd qtr.	2,589	500	0
4th qtr.	3,705	1,200	0
1989			
1st qtr.	3,356	975	0
2nd qtr.	4,170	500	102
3rd qtr.	8,099	500	1,100
4th qtr.	7,906	0	2,795
1990			
1st qtr.	4,959	0	3,100

Source: Fannie Mae
* - Includes debt issued with maturities of 1-year or more.

Pricing and funding for interest rate risk

Fannie Mae uses duration analysis in two ways in monitoring and managing its mortgage portfolio. First, Fannie Mae calculates the estimated durations of all its mortgage assets at least once a quarter. And second, in evaluating potential new purchases, Fannie Mae assumes it would fund the new purchases with debt that gives it the best duration match.

The Portfolio Management Department determines the duration characteristics of mortgage purchases and passes on to the Finance Department the recommended debt mix to attempt to achieve a duration match. The Finance Department incorporates the recommendation in its continuing financing plans. That is, purchases are not matched exactly and simultaneously by debt issuance, but rather the Finance Department incorporates the information in adjusting its debt strategy over quarterly periods.

When pricing for interest rate risk, Fannie Mae uses an in-house mortgage portfolio simulation model to calculate the premium necessary for Fannie Mae to protect itself against the interest rate risk associated with purchasing additional mortgages.[21] The model also estimates the expected duration of the new assets under consideration for purchases and assesses the potential performance over various scenarios. Fannie Mae states they will not purchase a mortgage for the portfolio unless the spread is high enough to compensate for the additional risk and to provide Fannie Mae with an acceptable profit margin.

The framework of the portfolio simulation model assumes that a subsidiary is established to invest in a pool of mortgages at a specified yield. To fund the purchase, the subsidiary receives an initial equity contribution from the parent (Fannie Mae). After that, the subsidiary issues debt for the remainder of the funding. The model then simulates the performance of the leveraged investment product over more than 400 interest rate scenarios. (Default is accounted for by subtracting a constant basis point amount from the net coupon rate - supplied by the output of Fannie Mae's default model, housed in Financial Analysis). For each interest rate scenario, the model generates monthly income and balance sheets of the subsidiary. It also provides detailed and summary statistics on duration, risk and return measures, and the stability of the risk/return profiles over different scenarios.

If the spread between the mortgage yield and the expected cost of funds is too small, the mortgage considered for purchase will be pooled and sold.[22] Thus if spreads widen and remain high, rapid growth in the portfolio could take place, or conversely, if they narrow, more will be pooled and sold. However, several additional factors are also considered, for example, the growth pattern of the portfolio over time, product mix, and competitor prices.

Market value accounting and sensitivity to interest rate risk

The merit of marking to market a company's portfolio is that, in contrast to book value, it takes into account recent economic developments in valuing a firm's net worth. In one sense, it gives an estimate of the value of the firm if it liquidated all its assets and liabilities. However, it also makes it possible to analyze the sensitivity of a firm's current book of business to changes in interest rates. In the latter sense, it is also a measure of Fannie Mae's ability to insulate itself from interest rate risk through its strategy of duration and convexity matching.

Although generally accepted accounting practices (GAAP) have not been developed for market value accounting, it is not uncommon for financial firms to develop systems for marking balance sheets to market because close proxies for the present prices of most assets and liabilities can be obtained in the market.

Fannie Mae has been developing a new system by which it will ultimately calculate mark-to-market value sensitivities. At present, Fannie Mae considers five separate categories in deriving a corporate market value:

(1) Liquid investment portfolio. Fannie Mae makes a specific allocation of debt to its liquid investment portfolio (under 10 percent of total assets). In doing this, Fannie Mae assumes the liquid investment portfolio to be 100 percent funded with short-term debt. The liquid investment portfolio and the debt allocated to finance it are assumed to have negligible (zero) sensitivity to interest rate changes. The remainder of corporate debt, with minor adjustments, is allocated to financing the mortgage portfolio.

(2) Mortgage portfolio of "securitized" assets and the debt used to finance it. First, Fannie Mae breaks out its portfolio into categories by instrument, coupon, and seasoning. Next, the portfolio is converted to notional MBS by "charging" the firm a guarantee fee for mortgages in its portfolio equal to what they would charge a third party. That is, Fannie Mae reduces the yield on its portfolio by the amount of the fee. (See (3)) Then Fannie Mae identifies the debt used to finance its portfolio, which is, largely, its total debt less that portion allocated to the liquid investment portfolio. The market prices of Fannie Mae MBS are used to value the portfolio, and the market prices of Fannie Mae debt are used to value the debt used to finance the portfolio.

The same system is utilized to estimate how the prices of all Fannie Mae's assets and liabilities would change in response to changes in interest rates. New asset and liability prices are estimated for all of the assumed higher and lower interest rate environments. For the sensitivity analysis, Fannie Mae has computed the changes in the net value of its mortgage asset portfolio and the debt used to finance it.

(3) Notional MBS insurance fee contracts. The notional MBS insurance contracts are on the mortgages in their portfolio that they "convert" to MBS by charging themselves a fee. The fee on notional MBS is treated as a separate income item and, for computing present value, is added to actual MBS fees.

(4) Outstanding MBS insurance fee contracts. The outstanding MBS are those Fannie Mae guarantees for others. Both the notional and outstanding are valued in the same way. For mortgages on which Fannie Mae has risk ("Fannie risk"), it uses quotes for nonrecourse mortgage servicing from two firms for four categories: fixed-rate, ARM, seasoned, and unseasoned. For mortgages for which it does not have risk ("lender risk"), Fannie Mae gets the same four quotes for recourse servicing. The quotes from the two firms are averaged and used in valuing all Fannie Mae's outstanding and notional MBS. The cumulative total is shown as an asset on its market value balance sheet.

To estimate the market value sensitivities of the MBS insurance fee contracts, Fannie Mae derived market quotes for Interest Only STRIPS (IOs) on MBS with weighted average coupons and maturities comparable to those of Fannie Mae's MBS outstanding. Once Fannie Mae had prices for the relevant STRIPs, it simulated how the prices would respond to changes in interest rates on the assumption that the market value sensitivity of the fees on the notional and outstanding MBS was equal to the sensitivity of the relevant IO STRIPs.

(5) Residual balance sheet items. The remaining items are generally ones in which book and market values were close to identical. The market value sensitivity of these items taken together is assumed to be zero.

Results of mark-to-market sensitivity analysis

The impact on Fannie Mae's net worth of immediate parallel shifts in interest rates up and down of 500 basis points, in 100 basis points increments, is shown in Table 17. Actual net worth as of December 31, 1989 is listed as $6.1 billion. The "securitized" portfolio is the net value of its mortgage asset portfolio and the debt used to finance it.

As seen in Table 17, interest rate changes have their greatest impact on the net value of Fannie Mae's "securitized" portfolio. For a range of plus or minus 300 basis points, Fannie Mae's portfolio is more sensitive to increases than decreases in interest rates because of its positive duration gap. For a rate increase of 300 basis points, the net value of its portfolio is negative. However, for rate shifts greater than 300 basis points, the portfolio is more sensitive to decreases in interest

Table 17

Sensitivity of Fannie Mae's Net Worth to Changes in Interest Rates

(End of 1989, $ billions)

Interest Rates Changes[1]	"Securitized" Portfolio[2]	"Notional" MBS[3]	Actual MBS[4]	Other Items[5]	Total Value
+ 500 bp	-3.1	0.6	1.7	0.5	-0.3
+ 400 bp	-1.6	0.6	1.8	0.5	1.3
+ 300 bp	-0.2	0.6	1.8	0.5	2.7
+ 200 bp	1.3	0.6	1.8	0.5	4.2
+ 100 bp	2.5	0.6	1.7	0.5	5.3
Actual	3.4	0.5	1.7	0.5	6.1
-100 bp	3.6	0.5	1.5	0.5	6.1
-200 bp	3.0	0.4	1.3	0.5	5.2
-300 bp	1.2	0.3	1.0	0.5	3.0
-400 bp	-1.8	0.2	0.7	0.5	-0.4
-500 bp	-5.6	0.2	0.6	0.5	-4.3

1. Actual interest rates for January 25,1990; hypothetical rates assume parallel shift in yield curve.
2. Mortgage portfolio whole loans viewed as MBS, net of value of debt used to finance portfolio.
3. MBS insurance contracts on whole loans held by Fannie Mae portfolio.
4. MBS insurance contracts on pools held by outside investors.
5. Net value of other balance sheet entries (physical plant, tax items, etc.); assumes no interest rate sensitivity.

Source: Fannie Mae.

rates. For a 500 basis point increase, the magnitude of the change (opposite sign) is almost as large as the year-end actual value. Note also that the value of Fannie Mae's fee income moves in the opposite direction of the portfolio for changes in interest rates, remaining positive for all interest rates, and providing a partial, albeit much smaller, offset to the impact of interest rate changes on the portfolio.

The net impact of the divergent movements of the portfolio and fee income on Fannie Mae's net worth of large changes in interest rates is reflected in the movements in Fannie Mae's net worth. Fannie Mae, as it is currently structured, can withstand decreases in interest rates of up to 300 basis points and increases of up to somewhere between 250 and 300 basis points without the market value of the firm dipping below the year-end book value. But for increases of 500 or more basis points and decreases of 400 or more basis points, the market value of the firm turns negative.

Fannie Mae's interest rate stress test

Fannie Mae has run two stress scenarios: scenario I, the 1978-1982 experience; and scenario II, letting interest rates go up 600 basis points across the board over a year and staying there for four years.

Scenario I uses actual Government rates observed in the 1978-1982 period. The cost of Fannie Mae debt is estimated by adding to the yield on Treasuries an amount equal to the average recent (1989 through September) spreads between Fannie Mae debt and Treasuries. The projection period began in November of 1989. Thus forecast for October 1989 was developed using rates corresponding to January 1978, etc.

Scenario II was run by Fannie Mae in December 1989, using November 1989 as the base month. Interest rates are increased by 600 basis points from November 1989 averages in 50 basis point per month increments. The rates were then held constant at their higher levels for four years. The major assumptions are listed below.

(1) Mortgage purchases. For both scenarios Fannie Mae assumes that mortgage purchases would be only high enough to offset liquidations, resulting in no portfolio growth over the five-year test periods. Purchase volumes for each product type are set equal to liquidation volumes for that product.

For fixed rate products, projected yields are based on recent spread relationships between Fannie Mae's posted yields and the benchmark Ginnie Mae coupon yields. For ARMs, Fannie Mae assumes the purchase yields are based on recent spreads between posted yields and debt costs. The income effects of ARM repricings are also included.

(2) Portfolio liquidations. Projected liquidations provide estimates for needed purchases to maintain a constant portfolio balance. The model assumes that the prepayment rate on any given pool of mortgages is positively related to the spread between the coupon rate on that pool and current mortgage rates. The relationship is based heavily on historical experience for the MBS market and Fannie Mae's whole loan portfolio. Even when the spread between a mortgage pool's rate and current market rates is considerably below zero, some level of prepayments occurs.[23]

First, the model was run projecting no purchases using the assumed interest rate path. The resulting projected liquidations provided an initial estimate for the projected volume of purchases needed for the stress period. In the second step, the liquidations on purchases made during the stress period were estimated. The sum of the two were taken as the total purchases for the period.

(3) Portfolio funding. In addition to the assumption of no growth of the portfolio, Fannie Mae assumed that the overall maturity of outstanding debt, as well as the mix between short-term and long-term debt, would stay constant over the forecast period. As debt matured it was replaced by an appropriate mix to maintain the original maturity structure. Debt funding costs are determined by the actual (1978-1982) or projected (up 600) rates and assumed spreads.

(4) MBS issues and liquidations. In both scenarios, it is assumed that higher interest rates will restrict the level of new MBS issues, as well as reduce the level of liquidations. The liquidation rate for MBS in both scenarios was adjusted in proportion to the liquidation rate for the portfolio. In the first scenario (1978-1982), new MBS issues are assumed to equal liquidations, resulting in no growth in MBS outstanding. In the second scenario (up 600 basis points), it is assumed that issues will decline significantly from current levels, but that there will be small growth in the outstanding balance.

(5) Provision for losses. For both scenarios, Fannie Mae maintained the provision for loss expense from its current corporate plan projection. This expense would be expected to change in different scenarios as a result of changes in business volumes and credit loss experience. However, because Fannie addresses defaults and associated losses in its credit stress test, it did not address the issue here.

(6) ARM repricing. The effect of ARM repricing is projected using aggregate data from the ARM portfolio for the first test, and a repricing model was developed for the second

test. In both cases, Fannie Mae employs the Federal Home Loan Bank 11th District Cost of Funds Index (COFI) and relevant Treasury indexes.

Results of the interest rate stress test[24]

Scenario I. The first test replicates the U.S. interest rate experience of 1978-1982, with the projection period beginning in November 1989. On a yearly average basis, interest rates climbed approximately 650 to 1100 basis points from their 1977 averages to their peaks in 1981. However, because 1989 interest rates, which were much higher than in 1977, are used as a base for Fannie Mae's 1978-1982 scenario, interest rates are effectively increased in the stress test by between approximately 480 and 825 basis points on a yearly average basis, or by magnitudes more comparable to those in the up 600 basis points test (Scenario II).

Fannie Mae states that the results of this stress test indicate that the largest effect on earnings would be in net interest income. As interest rates rise to their peak in mid 1993 (which corresponds to late 1981 historical rates), Fannie Mae's states that the yield on earning assets rises more slowly than borrowing costs. The relatively slow increase in the yield on earning assets results because only a small portion of the existing mortgage portfolio is expected to liquidate each year and be replaced by higher yielding assets. This is because mortgage liquidations are expected to slow as interest rates rise, and also because the size of the portfolio is assumed to remain constant over the period of the test. Given the structure of Fannie Mae's balance sheet, more debt than assets would mature and be refinanced each year, resulting in a faster rise in borrowing costs.

Fannie Mae states that the net result is that its net interest income remains significantly positive, as does after-tax net income, throughout the five-year test horizon, and equity more than doubles over the horizon of the test.

Analysis of the results obtained by Fannie Mae actually show net interest income increasing by 33 percent in the first year of the test and staying near that higher level until the last year of the scenario. This outcome is influenced by the fact that, although the interest rates used in the stress forecast period are taken from the 1978-1982 period, the interest rates on Fannie Mae's maturing assets and debt are the actual interest rates on its assets and debt outstanding as of late 1989. A significant portion of Fannie Mae's outstanding mortgages and debt was issued in the 1980s, when interest rates were above those of the first part of the stress forecast period. Given the structure of its balance sheet, more debt than assets are refinanced each year.

Thus when that debt is rolled over early in the stress scenario, it is rolled over at lower 1978-1980 interest rates, providing an artificial boost to net interest income.

Later in the scenario, the increases in asset yields and borrowing costs move more in tandem until the last year when interest rates plummet. When interest rates drop (corresponding to 1982), short-term rates fall by greater amounts than long-term rates. More debt than assets is rolled over at the lower interest rates, providing a substantial boost to net interest income.

The combination of starting the scenario with 1978-1982 interest rates and having short-term interest rates plunge by far greater amounts in the last year of the scenario yields unusual results for an interest rate stress test. Having the more rapidly maturing debt being rolled over at lower interest rates early in the period (corresponding to 1978-1979) raises net interest income in the first part of the test by a third, and then having interest rates drop at the end of the period (corresponding to 1982) provides an additional 35 percent boost in the last year. The result, which is unusual for a stress test, is that net interest income increases by about 75 percent over the test horizon.

Scenario II. The second test simulated a 600 basis point parallel upward shift in the yield curve over a twelve-month period starting from November 1989 levels. Interest rates were then held at that level for four years.

This scenario produced declining, although still significant, levels of net interest income. As with the first scenario, Fannie Mae states that as interest rates increase, the yield on earning assets rises more slowly than do borrowing costs, particularly until all short-term debt is refinanced at the higher interest rates. After that point, the increase in asset yields and borrowing costs move more in tandem, resulting in a stabilization in the level of net interest income. The results show net interest income falls by about 40 percent in the first year and then drifts down over the remainder of the period, for a 44 percent decline over the horizon of the test.

For both scenarios, Fannie Mae maintains the same loss projections from its corporate plan. Yet, given the magnitude of the interest rate increases in both scenarios, it is reasonable to assume that defaults and the related losses would increase significantly. Fannie Mae states that because the impact of defaults are treated in its credit stress test, the issue is not addressed here. However, Fannie Mae's credit stress test is based on its 1981-1982 Texas experience. In 1981, interest rates were at or near their peaks, and, in 1982, interest rates fell significantly and have not approached their 1981 levels since.

Thus Fannie Mae's credit stress test does not cover a period of sharply rising (from 480 to over 800 basis points) interest rates.

The expected increase in defaults and the related losses in an increasing interest rate environment would materially affect the results of Fannie Mae's interest rate stress test. For example, ARMs have a greater likelihood of default both because of the payment shock when interest rates rise and because the average LTV distribution of ARMs is higher. Since ARMs became popular in the early 1980s, the interest rate environment has been very stable, especially when compared to the 1978-1982 period. If interest rates were to rise by 400 to 800 basis points today, default rates for ARMs would increase by a significant, but largely unknown, magnitude.

Conclusions and recommendations

Fannie Mae's primary exposure to interest rate risk is determined by the size of its portfolio and the volume of debt outstanding used to fund the portfolio. It is exposed to interest rate risk on its MBS business to the extent that the market value of its fees change, and to the extent that movements in interest rates will affect prepayment and default rates.

Fannie Mae's strategy to manage interest rate risk is to target a 6 month maturity gap on its mortgage assets and the debt used to fund mortgages. The gap is positive to account for the prepayment option on the mortgages, whereas most of its debt outstanding is noncallable. In addition, over the last two years, Fannie Mae has increased its issuance of debentures with callable or other features to more closely match the payment characteristics of mortgages in different interest rate environments.

However, since the durations of its assets and liabilities change at different rates (convexity differences), it is not possible to perfectly match the payment features of mortgages with those of debt instruments when interest rates change. This is because there is no single marketable debt issue that has the same duration characteristics as mortgages over all interest rate scenarios. In order for Fannie Mae to duration-match finance, it is necessary to use a combination of issues to obtain a weighted average duration equal to that of the mortgages. Yet, the durations of the debt mix will vary dissimilarly under different interest rate scenarios than do the durations of mortgage instruments.

The difficulties of insulating a portfolio of mortgages funded with a mix of debt from interest rate changes through trying to match the duration and convexity of assets and liabilities is revealed in the results of Fannie Mae's mark-to-market balance sheet results. For large interest rate changes, the net market value of Fannie Mae's portfolio and debt turns negative. At the same time, the market value of the guarantee fees on its MBS business is virtually immune to large interest rate increases, and is cut by up to two-thirds for large interest rate declines. The interest rate sensitivity of Fannie Mae's net portfolio is expected to be reduced, however, with the addition of more callable debt.

Fannie Mae's interest rate risk associated with its MBS financing is much lower because most of it, except for the impact on its fee income, is passed on to the investor. Thus Fannie Mae can insulate itself more against divergent large movements in interest rates, and reduce the potential exposure of the Government, by increased use of pass-through financing.

Management and Operations Risk

Overview

A review was performed to identify Fannie Mae's controls and systems in place to monitor its management and operating risks. The review relied primarily upon interviews of Fannie Mae officers to determine the existence of risk controls in five areas: (1) planning, (2) policy making, (3) control systems, (4) management information systems (MIS), and (5) personnel administration. The review focused on identifying management processes that exist to control the organization by monitoring the operations, identifying issues which pose potential risk to operations, and implementing corrective measures.

Planning

Under the direction of the VP for Financial Management Controls, Fannie Mae operates a formal planning process. Planning occurs on three levels: a five-year Strategic Plan, a three-year budget and business plan, and an annual budget and business plan. Plans at all three levels are subject to scrutiny by the Board of Directors. Plans are communicated throughout the organization to provide employees a consistent understanding of Fannie Mae's goals.

The Strategic Plan is derived from a mission statement that considers Fannie Mae's relationship to and responsibilities vis-a-vis five interest groups: customers, employees, shareholders, capital markets, and the public. Goals are formulated from the mission statement; the 1990-1994 plan lists six goals, describes each in the context of key environmental issues, and lists general strategies for accomplishing each.

The three-year business plan and budget presents dollar volume revenue projections and articulates specific decisions regarding resource allocation and spending. Both the five-year Strategic Plan and the three-year budget plan are prepared annually on a "rolling" basis; this helps keep both up to date and consistent with each other and with the annual budget plan.

The annual budget plan most explicitly addresses Fannie Mae's immediate objectives and revenue/expense flows. As part of the annual budget monitoring process, there are regular operating reviews between the heads of each division (typically the EVP and SVP level) and the President/Chief Operating Officer to discuss variances and forecasts and provide for cross-functional communications.[25]

The current President is described as a very "hands-on" executive. As a result, Fannie Mae states that these periodic reviews are an effective tool to keep him informed of actual progress made toward division objectives and to alert him promptly of deviations from budgeted revenue or expenditure. Because these operating review meetings culminate with a general review by the Operating Committee and Chairman, they also serve to similarly inform senior management of Fannie Mae's performance relative to the business plan and budget.

Policy Making

Fannie Mae's policy- and decision-making process works through a clearly defined committee structure. This process allows for policies to be debated and resolved at sufficiently high management levels, for consideration of the effects of policies on the goals of the organization, and for communication of policy decisions throughout the organization. Fannie Mae also periodically reviews policies for currency and appropriateness.

Policy making takes place through the operation of five standing committees staffed by management. These five committees are: Operating; Credit Policy; Asset/Liability; Resource Management; and Benefit Plans. Responsibility for identifying strategic issues and recommending pertinent policies and procedures rests with these five committees. Decisions made at these committees are communicated to lower management by the member officers. Of the five management committees, the first three are perhaps the most visible and important in terms of breadth of scope and representation of management.

The Operating Committee is chaired by the President and composed of the Vice Chairman, five Executive Vice Presidents, two Senior Vice Presidents, and the VP/Assistant to the Chairman. It meets weekly and "makes key strategic decisions for Fannie Mae." If an issue debated at another committee cannot be satisfactorily resolved, the chairman or any member of that committee may take the issue to the Operating Committee for counsel; thus, the Operating Committee serves as the highest management forum (below the Board of Directors) to debate and resolve key issues.

The Credit Policy Committee is chaired by the EVP/Chief Credit Officer and is composed of three EVPs, four SVPs, and two VPs. The committee serves as the forum to discuss weekly a wide variety of credit-related issues and provide the Chairman and President with recommendations to deal with short-term and long-term risk management concerns. Requests for variances from established credit policies may be presented to the committee. If the request creates dissension within the committee, the chairman or any member of the Credit Policy Committee may present the issue to the Operating Committee.

The Asset/Liability Committee is chaired by the President and composed of three EVPs and three SVPs. The committee assesses market opportunities and operating unit strategies as they relate to managing both sides of Fannie Mae's balance sheet. This committee also meets weekly.

Separate from the committee structure, policies and procedures that relate to the five regional offices are developed through interaction between the SVPs who manage those offices and the EVP for Marketing to whom they report. In addition, Fannie Mae has an Advisory Council comprised of businessmen from the housing and mortgage finance industries which meets three times a year.

Control Systems

Overall the findings of the review indicated that Fannie Mae has the necessary systems, policies, and procedures to monitor delegated activities and the reporting processes to inform management of the soundness of the organization's activities and that deficiencies noted by audits receive the prompt attention of senior management.

Fannie Mae uses systems of internal controls that have three objectives: (1) ensure that transactions are executed in accordance with appropriate authorization; (2) permit financial statements to be prepared in accordance with GAAP; and (3) establish organizational accountability for assets. These systems include: (a) policies and procedures regarding execution, documentation and recording of transactions; (b) organizational structure that provides for effective segregation of duties; (c) oversight by an Audit Committee of the Board of Directors; (d) an internal Office of Auditing to monitor compliance and evaluate internal controls; and (e) regular audits by an independent CPA firm (currently Peat Marwick Main & Co.).

The Audit Committee of the Board, comprised of outside directors, provides Board oversight for accounting, financial reporting, internal controls, internal audits and selection of the external auditors. The Committee meets periodically with management, the Office of Auditing and the external auditors to discuss concerns and overall effectiveness of controls.

The internal Office of Auditing, which is accountable to the Audit Committee and senior management, is responsible for evaluating the effectiveness and adequacy of controls and compliance with policy and procedures. The office prepares an annual audit plan based on risks associated with the particular activity, reviews it with senior management and the Operating Committee, and submits the plan to the Audit Committee for approval.

Internal auditors coordinates throughout the year with the external auditors, primarily to keep each other informed of their work and schedule and any concerns. They share work papers to avoid unnecessary duplication of effort; however, external auditors review the work of the internal audit to determine acceptability.

The auditors tailor the procedures to the individual business activity. The scope of the audits includes reviews of operational controls, efficiency and effectiveness of the unit, financial controls, transaction recording and reporting, and associated EDP application systems. Interviews set the scope of each audit and serve as a preliminary survey to identify strengths and weaknesses of controls. Audits test for proper operation and effectiveness of controls and each audit includes a report describing the purpose, scope, findings, recommendations for improvement and overall conclusions. Fannie Mae states that all audit reports receive management's prompt attention and conditions requiring corrective action are tracked in a status report, which is updated monthly.

Management Information Systems

Overall observations indicate that systems and controls exist which assure that the directors and management receive the necessary and accurate information to define goals, guide operations, and make timely decisions.

However, the latest external audit raised several concerns about the effectiveness of information processing and optimal use of MIS. While these issues were not considered material in nature by the audit firm and corrective action is planned, the tremendous growth in the volume and types of financing activities requires that the expansion and effective use of MIS keep pace.

Responsibility for MIS is housed in the Operations and Systems Department. The profile and importance of this Department to the success of the organization's operating performance has been recognized by its rapid growth during the past five years. It now encompasses 35 percent of total staff and has an annual budget of about $80 million. The Office of Auditing and the external auditors also provide for quality control reviews. It employs staff training and makes additions to EDP audit staff to enhance its ability to review newly created EDP systems.

During the past five years, Fannie Mae has responded to three significant MIS issues:

(1) the need to develop an on-line database regarding its loan purchases;

(2) the need to facilitate and automate communications with its private sector counterparts; and

(3) the need to upgrade its computer facilities. Initiatives in these three areas have improved or are improving the extent and quality of information available for management to monitor and control exposure and performance.

The initiative responding to the first issue was the creation of the LASER system, an integrated family of reporting and accounting systems; it maintains detailed information on each loan purchased.[26] Analysis of data stored on LASER can allow identification of developing patterns of potential problems in specific markets.

An initiative responding to the second MIS issue has been the creation of a nationwide communications network (the MORNET system) designed to automate access to Fannie Mae products and services, and to primary market participants, and also transmit data (such as prices) between lenders and Fannie Mae. MORNET also serves as an initial screen for the completeness of data for transactions that lenders submit to Fannie Mae for approval.

The third issue, the need to upgrade internal computer capabilities, is being addressed by a number of ongoing initiatives including a recent commitment to achieve a completely IBM-compatible hardware and operating system environment over the next few years.[27] Movement to an entire IBM environment is occurring at both the mainframe and personal computer levels.

The broad goals of such initiatives are to widen the scope of information made available to management, and to improve the quality of such information.[28] In turn, broader and more reliable information is intended to help management identify new risks before they become major problems and to predict the impact of changes in loan underwriting policies and procedures.

Personnel Administration

During recent years, Fannie Mae has experienced periods of both rapid turnover and fast growth. The organization has responded to these issues by formalizing personnel policies and procedures for hiring, appraisal, training, promotion, and management succession. The goal of the Human Resources Division is to help Fannie Mae attract and retain employees who contribute to the organization's mission and to meet objectives of affirmative action.

Conclusions and recommendations

While Treasury did not perform verification procedures, overall the review indicates that the controls, monitoring and information systems incorporated by the organization provide for:

(1) organized planning centered on a budget process;

(2) a clearly identified organizational structure with committees that serve as the forum for policy-making;

(3) control systems reviewed and often designed by an internal audit office that reports to the Board of Directors and supplemented by independent external audit services;

(4) a growing and rapidly evolving MIS; and

(5) established personnel administration procedures based upon a system of management by objectives.

The management and operations risk part of this study was developed from a series of interviews with Fannie Mae staff in January. Subsequent experience in other areas of the study disclosed exceptions to the information supplied in the January interviews. The exceptions relate to the control systems and the MIS.

Control systems. Subsequent experience in the credit risk area of the study disclosed control system exceptions involving lack of documentation for computer models and procedures for using the models. At the time of the study, there was no documentation for Fannie Mae's credit risk pricing model, a central component of its ability to manage risk. Nor was there written documentation for Fannie Mae's credit risk stress test that employs the credit pricing model. As it turned out, the credit pricing model had not been employed for the stress test for Fannie Mae's complete portfolio and MBS book of business, but only on a subset of the portfolio consisting of unseasoned 30-year fixed rate mortgages, and the results were extended to the rest of the portfolio and MBS using simplifying assumptions based on Fannie Mae's experience.

Failure to maintain written procedures for complicated computer models can lead to work interruptions and other problems, particularly in the pricing of products that use information from the models, in the event of staff turnover.

Management information systems (MIS). Treasury's experience indicates that the subsequent examination phase of management and operations risk should focus attention on the MIS area. Specifically, there is need to improve the effectiveness of information processing and use of MIS.

Treasury's experience in acquiring data for other areas of the study disclosed that, while the LASER is in operation, Fannie Mae has not yet developed the capability to query the system for data in an accurate, consistent, or timely manner. On more than one occasion, Treasury requests for data, especially relating to credit risk, were returned with information that was incorrect or inconsistent with that received from other similar requests. In some cases, more than one subsequent request was needed to obtain information considered accurate (although Treasury did not perform verification procedures). For example, Treasury's request for annual data on Fannie Mae's mortgage purchases for its portfolio and MBS issuances, broken out into a number of risk-related categories, and a similar request for the same categories of data on a year-end outstanding basis, yielded noticeably inconsistent information. Both sets of data turned out to be incorrect according to Fannie Mae.

In addition, there are a number of independent offices within Fannie Mae that have generated data bases for analysis outside of the general corporate data systems. Treasury experience indicates that these data sources are not consistent with each other, nor is their existence universally known within Fannie Mae.

Analysis of Capital

Overview

The primary focus of this study is the potential risk that Government-sponsored enterprises could pose for the Federal Government. Prior sections have discussed specific risks that ensue from Fannie Mae's activities. The riskiness of Fannie Mae from the Federal Government's point of view is a combination of these risks and its capitalization. Capital provides a buffer against adversity; the more capital a firm holds, the longer it can survive a period of financial difficulty before reaching the point of insolvency, other things being equal.

Clearly, the concept of capital adequacy includes risk. In simple terms, the more risk a firm undertakes, the more capital it needs. In this regard, Fannie Mae is an interesting case study. It began the 1980s with substantially more capital in relation to its size, but also with significantly worse risk management, than it ended the decade. During the 1980s, Fannie Mae faced considerable problems, and there were periods when the firm's capitalization declined both absolutely and in comparison to its size. A restructuring of the corporation took place during the 1980s, and, by the end of the decade, Fannie Mae was a very different corporation, with a different mix of capital and risk.

While Fannie Mae successfully surmounted the financial problems which it faced in the early 1980s, this experience reinforces a principal contention of this study: in order to protect the Federal Government, there needs to be a mechanism to provide incentives to manage risks prudently, in the absence of the same degree of market discipline that fully private corporations face.

Recently, some observers have expressed increasing concern about the highly leveraged financial position of Fannie Mae and the potential risk of the need for the Federal Government to provide financial assistance to the corporation. These concerns have perhaps been heightened by developments in the savings and loan industry. While these concerns may be exaggerated, they need to be addressed.

This section will examine Fannie Mae's capitalization by focusing on (1) the components that comprise the corporation's capital, (2) the trends that have led to the current high degree of leverage, (3) capital adequacy rules to which the corporation is currently subject or which some have suggested the corporation should be required to meet, and (4) the Treasury's conclusions and recommendations concerning capital adequacy.

Components of capital

An analysis of Fannie Mae's capitalization must be preceded by an examination of the various components which comprise the corporation's capital. Since this is an examination of Fannie Mae from the perspective of its potential risk to the Federal Government, the analysis will include both equity and supplemental capital, which includes subordinated debt and loan loss reserves. Fannie Mae's total capital was $5.7 billion at year-end 1989, of which $3.0 billion was equity and $2.7 billion was subordinated debt and loan loss reserves.

Equity capital[29]

As of December 31, 1989, Fannie Mae's equity capital was structured as follows:

Common Stock and Paid-In Capital	$1,307 million
Retained Earnings	$1,771 million
less: Treasury stock	$(87)million
Total Equity Capital	$2,991 million

Common stock. Fannie Mae has only one class of common stock outstanding. The corporation had issued 247.6 million shares as of December 31, 1989, which includes 8.8 million shares held by the corporation as treasury stock, resulting in 238.9 million shares outstanding. The common stock is voting stock carrying the right of one vote per share. The stock may be freely transferred and is listed for trading on the New York Stock Exchange and other regional stock exchanges. The secondary market for the shares is liquid, reflecting the significant interest in the stock by the investment community. As of the end of April 1990, at a stock price of $34.50, the market capitalization of Fannie Mae common stock was over $8.2 billion.

Twice in the last nine years the corporation has issued additional common stock to the public, in 1985 and 1987. These issuances increased the capitalization of the company by a total of $482 million. Additionally, Fannie Mae began in 1987 to engage in treasury stock repurchases after its board approved a stock repurchase program which authorized the purchase of as many as 5 million shares (15 million shares after adjustment for subsequent splits). In 1987 and early 1988, the corporation spent $106 million to repurchase 3.5 million shares (10.5 million shares when adjusted for stock splits). There have been no additional repurchases since that time. The shares have been used to fund the corporation's obligations under its employee stock ownership plan and stock option programs. The balance of the shares, with a historical cost of $87 million, remains as treasury stock.

Preferred stock. Fannie Mae currently has no preferred stock outstanding. However, the corporation could issue 4.5 million of Series A adjustable rate preferred shares in exchange for an existing debenture issue (see below) subject to certain conditions. These shares would have a stated par value of $100 per share, be callable by the corporation at par three years after issuance, and would trade on the New York Stock Exchange. The preferred shares would have a cumulative dividend that would adjust quarterly based on a formula, but subject to a minimum rate of 12.5% and a maximum of 15.5%. To date, no exchange has taken place.

Warrants and convertible securities. As of December 31, 1989, Fannie Mae had issued 34.5 million warrants to purchase common stock, most of which are outstanding. The warrants are listed on the New York Stock Exchange, have an exercise price of $14.75 per share, and expire on February 25, 1991. If fully exercised, the company's capital would increase by $508.9 million. Since the common stock currently trades in the mid-thirties, it is reasonable to presume that, absent an adverse change in the company's condition during the next year, the warrants will be exercised, with a resulting capital infusion.

The corporation also has $450 million of exchangeable debentures outstanding, which mature on March 15, 1991. The debentures are exchangeable into the Series A preferred stock discussed previously, at the option of Fannie Mae. However, should the company exercise its exchange option, a debenture holder may elect, in lieu of the exchange, to lengthen the maturity of the debentures until 1994. If all the debentures were exchanged, Fannie Mae's capital would be increased by $450 million. It is unlikely, given the current interest rate environment, that the corporation would elect to convert the debentures due to the relatively high interest cost of the resultant preferred stock (12.5% minimum rate).

Additionally, Fannie Mae has issued a subordinated debenture which is convertible into common stock at an effective price of $6.54 per share. The debenture may be converted at any time prior to the issue's maturity of October 1996. Of an original issuance amount of $250 million, approximately $248 million had been converted to common stock as of year-end 1989. Therefore, while it is reasonable to assume that all of the remaining debentures will be converted prior to their maturity, the conversion of the remaining balance will have only a negligible impact on capital.

Retained earnings. At the end of 1989, the largest component of equity capital was retained earnings, which were $1,771 million or approximately 59 percent (see Chart 3). The relative importance of retained earnings is a recent development.

Looking at year-end figures for the 1980s, retained earnings reached a low point in absolute amount in 1985, when they amounted to $179 million, or about 18 percent of equity capital. The almost ten-fold increase from 1985 to 1989 indicates the profitability of Fannie Mae in the last years of the 1980s.

Supplemental capital[30]

As of December 31, 1989, Fannie Mae had supplemental capital components, not discounted under bank regulatory principles for time remaining to maturity, as follows:

Subordinated Debt	$2,265 million
Loan Loss Reserves	$ 455 million
Total	$2,720 million

Subordinated debt. Fannie Mae has nine issues of subordinated debt outstanding with maturities ranging from 1990 to 2019, with an aggregate outstanding principal amount of $2,265 million. One issue is convertible into common stock (see discussion above) and one issue is a zero-coupon security maturing in 2019. The subordinated debt contains no events of default, is traded over-the-counter, and is explicitly subordinated to any future U.S. Treasury advances. Fannie Mae subordinated debt is explicitly restricted in that payment may not be made as long as any event of default is outstanding on any senior debt, which would include Treasury advances. The explicit subordination to other liabilities makes it available to absorb any losses of the corporation prior to passing claims on to the Federal Government. Therefore, even though it is Fannie Mae's debt obligation, subordinated debt serves to diminish the risk to the Federal Government and, accordingly, should be a component of a study of capital adequacy from the Federal Government's perspective. Implicit in treating subordinated debt in this manner is the assumption that in the event of a Fannie Mae insolvency, the Federal Government would differentiate between the subordinated debt holders and other creditors. Treasury believes that the subordinated debt would be treated differently than other creditor claims in the event of a Federal Government rescue. The debt markets currently make this differentiation since the subordinated debt trades at a yield of approximately 20 basis points higher than other Fannie Mae debt of similar maturity.

Loan loss reserves. Loan loss reserves represent management's estimates of future losses related to current activities based on historical experience. This is in contrast to loss provisions, which represent the current expected loss on specific assets based on their present status. General loan loss reserves are a component of supplemental capital since they are the first point of absorption for losses. In establishing reserves, the corporation's capital is diminished through a charge to current year earnings, even though the losses have not yet been experienced. Accordingly, only after all the loan loss reserves have been exhausted is the corporation's capital exposed to losses from credit risk in the existing portfolios. Fannie Mae maintains loan loss reserves for both its portfolio of mortgages and its mortgage-backed securities outstanding. Excluding provisions for foreclosure losses, these reserves totalled $455 million at year-end 1989.

Capital ratios and trends

As of December 31, 1989, Fannie Mae had the following overall capital ratios:

Equity Capital[31]/Assets and MBS	.88%
Primary Capital[32]/Assets and MBS	1.01%
Total Capital[33]/Assets and MBS	1.67%
Loan Loss Reserves/Assets and MBS	.13%

Mortgage-backed securities (MBS) have been summed with assets in the computations since they represent commitments of the corporation which are a potential claim on capital. While the ratios provide a picture of high leverage at a point in time, they are by themselves insufficient to determine the corporation's capital adequacy.

Another means of analyzing the capital position of the company is to review changes over time. Tables 18, 19, and 20 present capital components, annual growth rates of these components, and various capital ratios over a ten-year period. Chart 3 shows the components of equity capital for the past ten years. Chart 4 shows the respective annual growth rates of primary capital (equity plus loan loss reserves) and assets plus MBS. Chart 5 is a graphical presentation of the primary capital ratio over the same period.

Looking at year-end figures, equity and primary capital reached a low point in absolute amount in 1984, reflecting the financial difficulties facing the corporation during the first half of the 1980s. Increases in equity capital since 1984, despite declining retained earnings through 1985, stem from sales of new common stock in 1985 and 1987 and strong growth in retained earnings starting in 1986 (see Chart 3).

Since 1984, Fannie Mae has in effect been substituting higher quality equity capital for supplemental capital when viewed as a percentage of composition. On a nominal basis, supplemental capital has increased modestly over the last five years, a result of increases in both subordinated debt and loan loss reserves.

As shown on Chart 4, primary capital grew more slowly than total assets plus MBS from 1980 through 1986, resulting in higher financial leverage. During this period, total assets and MBS more than tripled, while primary capital fell marginally in absolute amount and equity capital fell by almost 10 percent. (The percentage decline of equity capital from 1980 to 1984 is even more dramatic -- 30 percent.) Since year-end 1986, the data reveal a different trend (see Tables 19 and 20, and Charts 4 and 5). The ratios of the various measures of capital to combined assets and MBS have been improving. The principal reason for this improvement is the growth in capital due to a huge increase in retained earnings.

Comparisons of leverage ratios between 1980 and 1989 should be made with caution, because the composition of Fannie Mae's business has changed significantly. In 1980, Fannie Mae had no MBS outstanding. The MBS portion of Fannie Mae's business has increased every year since, to the point where, at the end of 1989, MBS represented 63 percent of Fannie Mae's business on a book value basis (see Table 18). The MBS business does not entail the interest rate risk inherent in being a portfolio lender. In addition, the corporation has a much better handle on its interest rate risk with respect to its retained portfolio than it did ten years ago. The level of credit risk is more difficult to ascertain, but there is evidence that the corporation's new business contains less credit risk attributable to factors such as the tightening of underwriting standards in 1985.

Also, it should be noted that since the end of 1986, Fannie Mae's leverage ratios have been improving at the same time that MBS have continued to increase as a percentage of the corporation's business.

Fannie Mae's strategy in the 1980s. Fannie Mae's experience over the past decade is an interesting and informative case study of the potential risks to the Federal Government of a Government-sponsored enterprise. As a result of business strategies followed in the 1970s, Fannie Mae began the decade with a higher relative level of capital than it currently has, but also with worse risk management which left it vulnerable to the high interest rate environment it was to face. However, four factors combined to enable a financially healthier Fannie Mae to emerge at the end of the decade: (1) the corporation's capitalization, (2) its continued access to the credit markets due to the Federal Government connection, (3) a new management team with a strategy for overcoming the significant financial difficulties the corporation faced, and (4) an economic environment that did not sabotage this strategy.

From 1980 to 1986, Fannie Mae took a calculated risk by pursuing a growth strategy that significantly increased its leverage. Elements of the company's strategy included (1) minimizing the firm's interest rate risk, (2) ending optional delivery commitments which locked the company into unfavorable purchases at low rates in rising rate environments, (3) issuing MBS, (4) developing new mortgage products to attract additional business, and (5) developing a new management team. The strategy worked -- it benefited from high housing inflation and the economy's avoidance of a recession since 1982 -- and the corporation has been able to improve its financial condition as a result of its enormous profitability in recent years. Moreover, the strategy worked despite regional setbacks, such as in Texas.

From this history, two observations can be made. With respect to capitalization, the situation is currently the reverse from what it was a decade ago. Then, there was a corporation with a level of capital significantly higher relative to its size but with a very poor handle on interest rate and credit risk. Currently, the corporation has better management of interest rate and credit risk, but a capital level that leaves less margin for error.

The second observation is that to minimize the risk to the Federal Government, the financial difficulties that Fannie Mae faced in the 1980s should be prevented from ever developing again. It is the Federal Government connection that is the reason a Government-sponsored enterprise is not subject to the same degree of market discipline facing entirely private corporations. Some form of incentives for prudent risk management needs to be in place to substitute for the market discipline to which GSEs, such as Fannie Mae, are not subject.

Capital adequacy standards

HUD requirements. HUD has statutory authority to regulate the capital level of Fannie Mae as it relates to levels of outstanding unsecured debt. HUD has established a ceiling ratio of 20 to 1 for outstanding unsecured debt to regulatory capital, including the gross amount of subordinated debt. The corporation is in compliance with this requirement; the ratio as of December 31, 1989 was 19.7 to 1. While this ratio requirement is a constraint on the growth of Fannie Mae's portfolio, because it sets a maximum leverage requirement, it is not an appropriate measure for overall capital adequacy. The MBS outstanding are not reflected in the HUD requirement and therefore this part of Fannie Mae's business is not restrained by a requirement to be supported by a specific level of capital. Moreover, the HUD requirement does not take into account the quality of Fannie Mae's assets or the interest rate risk in the portfolio. Any capital requirement, in order to be meaningful, must, at a minimum, include secured obligations; thus, the capital requirement should include MBS, since they represent an increasingly significant amount of the risk of Fannie Mae's operations.

Bank and thrift risk-based capital standards. The risk-based capital rules that the bank and thrift regulatory agencies have recently promulgated are the latest developments in regulatory capital standards. Because it has been suggested that these rules be made applicable to Fannie Mae, the Treasury calculated how a literal application of these rules would affect Fannie Mae. Any discussion of this subject must start with the recognition of a basic fact: Fannie Mae does not come close to meeting the capital level a literal reading of these rules would require. Proponents of applying these rules need to know the magnitude of the capital requirement they are advocating, while opponents need to consider the size of the shortfall.

The risk-based rules seek to reflect the relative levels of credit risk related to certain assets typically held by bank and thrift institutions by assigning them percentage weights to be used in calculating adjusted asset values. Both rules discount the value of subordinated debt based on its remaining time to maturity,[34] since any debt which matures in the near future is unlikely to be available to meet future capital needs. Additionally, the bank capital rules limit the level of subordinated debt which may be included in Tier 2 (supplemental) capital to 50% of the amount of Tier 1 (equity) capital. This limitation causes Fannie Mae's level of capital to risk-based assets under the bank rule to be lower than under the Office of Thrift Supervision requirement.

Treasury applied the bank and thrift rules to Fannie Mae's on- and off-balance sheet positions as of December 31, 1989. The results are presented in Tables 21, 22, and 23. Despite differences between the two computations, the ratios of capital to risk-adjusted assets for Fannie Mae are very similar at 3.1% under the OTS rule and 2.9% under the bank rule. If the fully phased-in bank rules (8% of risk-adjusted assets) were applied to the corporation, they would require Fannie Mae to raise approximately $8.4 billion of additional capital, consisting of at least $3.8 billion of equity capital. The remaining $4.6 billion could be Tier 2 capital, of which $1.7 billion could be new issuances of subordinated debt.[35]

If the commercial bank capital rules are adjusted, by lowering the capital requirement for MBS from 8% to 6%, to reflect the fact that MBS issued by Fannie Mae have essentially no interest rate risk,[36] the additional capital requirement is reduced to $6.2 billion. This could be met by an additional $2.7 billion of equity and $3.5 billion of Tier 2 capital, of which $1.1 billion could be in new subordinated debt. Additionally, applying the interim OTS capital requirement of 6.4% and adjusting for the lack of interest rate risk on the MBS portfolio results in a capital shortage of $3.9 billion composed of $1.5 billion and $2.4 billion of Tier 1 and Tier 2 capital, respectively.

One important aspect of Fannie Mae's business is not reflected in the bank and thrift risk-based capital requirements. Fannie Mae had $94 billion of MBS outstanding at year-end 1989 in which the corporation had some form of recourse to the loan originator in the event any underlying loans in the pool default. If these securities were put in the 20% risk weight category, it would lower the corporation's capital requirement under the fully phased-in standards by approximately $2.3 billion to a level of $11.3 billion.

The Treasury has concluded that the existing bank and thrift capital rules, while they may provide a useful framework for thinking about capital requirements for Fannie Mae, are not appropriate in their present form for determining Fannie Mae's capital adequacy.

There are significant differences in the nature of Fannie Mae's business and that of banks and thrifts subject to the risk-based capital requirements. Among these differences are Fannie Mae's national diversification of its mortgage holdings, almost unrestricted access to all ranges of the capital markets, receipt of guarantee fee income, and concentration of assets in low risk mortgage loans. These differences suggest that a general capital standard devised for diversified depository institutions with primarily local or regional operations is not appropriate, though it should be noted that there is an increasing concentration of mortgage originations in large banks and thrifts which are subject to the risk-based rules.

The rules also do not take into account the differences in credit quality among different types of mortgages. Because Fannie Mae's business is concentrated in mortgages, any capital standard to which the firm is subject should reasonably account for different credit risk characteristics of the mortgages it holds in portfolio or has securitized. Important characteristics would include LTV ratios, variable or fixed interest rate, term to maturity, balloon payment at maturity, availability of recourse, etc.

In addition, the bank and thrift risk-based capital rules do not currently factor in interest rate risk. Fannie Mae has a large retained portfolio of mortgages. The current bank and thrift capital rules would provide no outside incentive to manage the interest rate risk inherent in financing this portfolio of mortgages in a prudent manner.

Comparison to private mortgage insurers. Frequently, Fannie Mae's business is compared to that of private mortgage insurers such as PMI or MGIC. In reviewing the operations of the private insurers a number of similarities were found, but the existence of a substantial number of significant differences, especially the primary risk assumed by the private mortgage insurers, caused the Treasury to conclude that no new insight on the corporation's capital adequacy could be found in comparing the two businesses. The principal difference between the two types of entities is that on the higher risk loans, those with LTVs higher than 80%, the private mortgage insurers have the primary risk of loss while Fannie Mae carries only a secondary risk since it has obtained private mortgage insurance on these loans. Additionally, these are the primary loans in a private mortgage insurer's portfolio while Fannie Mae has a substantial portion of its business in less-risky, lower loan-to-value loans. Therefore, the nature of the risks undertaken by Fannie Mae are lower and different than those undertaken by private mortgage insurers.

Another factor which impedes an effective comparison of capitalization is that most of the private mortgage insurers, and all of the highly-rated ones, have the benefit of some form of parental corporate financial support such as a guarantee. This means that a significant amount of *de facto* capital is carried off the balance sheet of the private mortgage insurers, making analysis all but impossible since the overall credit standing of the parent becomes important.

One approach, which the rating agencies use to evaluate the insurers and which would be meaningful for Fannie Mae, is to subject the portfolio of the corporation to a "stress test" of severe economic conditions. Any stress test used on Fannie Mae would have to be customized but could provide a useful analytical tool for judging capital sufficiency. The current capital requirements imposed by the states on mortgage insurers, generally 2.0% of the principal amount for mortgages which are 100% insured, are not applicable to Fannie Mae's situation due to the differences already discussed.

Stress tests. Overall, Fannie Mae's stress test may be a good management tool for assessing credit risk exposure and for pricing credit risk at the margin. It is not, however, useful by itself in deriving a standard for capital adequacy from the perspective of the Federal Government. First, the behavioral and structural parameters of Fannie Mae's credit pricing model are based only on recent experience, which has been normal. Second, the results of Fannie Mae's stress test are very sensitive to changes in critical underlying assumptions.

It is reasonable to expect that in a very stressful environment structural and behavioral relationships would likely change. For example, the pricing model uses recent experience for pricing credit risk. In a stress scenario, products would have different, unknown risk characteristics. By charter, Fannie Mae would be required to maintain a market presence, increasing its risk exposure, while it develops pricing criteria for a new environment. The latter is also related to management and operations risk, which the model does not capture. In a stressful period, Fannie Mae's public mission would require it to maintain a continuing presence; however, the implicit Federal guarantee may induce management to assume risk that would not otherwise be undertaken.

According to Fannie Mae, given its current book of portfolio loans and MBS, Fannie Mae currently would require capital (defined as equity plus loan loss reserves) of approximately 74 basis points (or leverage of 135:1) to withstand default rates and loss severities on its entire book of nonrecourse business comparable to what Fannie Mae experienced on its Texas 30-year loans in 1981 and 1982.

Fannie Mae's stress test results are keyed off the performance of its unseasoned (0-30 month) 30-year fixed-rate mortgages, using its credit pricing model to simulate its 1981-1982 Texas experience. In Fannie Mae's calculations for its capital plan, it assumed a capital requirement of 80 basis points (125:1) for this subset of its mortgages. To test the sensitivity of the results obtained by Fannie Mae as they apply to this subset of mortgages, Treasury asked it to run additional simulations with the credit pricing model, varying some of the underlying assumptions in a systematic way, specifically, the loss severity, the average default rate, and the composition of default rates by LTV.

Loss severity assumption. The model was tested for its sensitivity by varying the severity of losses assumed to occur with each default. A critical loss severity assumption is the sales price received on the real estate owned (REO) as a result of the default. Fannie Mae assumes that the REO sales price is a fixed percent of the original appraised value of a property. For its credit stress test, Fannie Mae uses 72 percent. Fannie Mae's actual national average REO sale price experience, which is still weighted heavily by REO in the southwest, has declined over the 1980s, averaging below 65 percent over the last four years.[37]

Six sets of simulations were run assuming an average default rate (8.95 percent) that approximates Fannie Mae's projected lifetime Texas experience for its 30-year fixed-rate loans, but varying the REO sales price percent in 2 percent increments from 74 percent down to 64 percent. The initial capital ratio was also varied from 80 basis points if capital could be depleted in a set of simulations.

At an REO price of 74 percent and a capital ratio of 80 basis points, the capital allocated for unseasoned 30-year fixed-rate mortgages was sufficient to withstand the adverse scenario. With the REO price at 72 percent (the REO price used in its stress test), the 80 basis points of capital allocated to the pool of mortgages was virtually depleted, and similarly for lower REO prices.

Capital would not be depleted with lower REO sale prices if the initial capital allocated to the pool of unseasoned 30-year fixed rate mortgages is increased. For example, with an assumed REO price of 70 percent, capital is sufficient if the initial capital ratio is raised from 80 to 95 basis points; for an REO price of 68 percent, it needs an initial capital ratio of 105 basis points; for an REO price of 66 percent, 118 basis points; and for an REO price of 64 percent, 125 basis points.

Average default rate. The model was also tested for sensitivity to changes in value of the average default rate (weighted by the current LTV distribution of unseasoned 30-year fixed-rate mortgages). Fannie Mae's actual average default rate through September 1989 for its Texas 1981-1982 loans on which it has data is approximately 8 percent. Based on this, Fannie Mae projected the lifetime default rate to be approximately 8.95 percent, or about 1 percent higher.

Looking at the individual years, the actual average default rate (weighted by 1989's unseasoned fixed-rate portfolio) for 1981 Texas loans is 6.5 percent, and that for 1982 is 9.4 percent. However, Fannie Mae's 1983 Texas default rate, at 9.1 percent, is almost as high as 1982's. Thus, Fannie Mae's worst two-year experience in Texas is not with loans made in 1981-1982, but with loans made in 1982-1983. For the 1982-1983 period, the actual (through September 1989) two-year average default rate is 9.2 percent, or about 15 percent greater than the actual 8.0 percent experienced for 1981-1982. Based on Fannie Mae's lifetime projections for its 1981-1982 default rates, the lifetime average default rate for 1982-1983 would be about 10.2 percent or higher.

Treasury asked Fannie Mae to run six sets of simulations, varying the average default rate on its unseasoned 30-year fixed-rate mortgages by 25 basis point increments between 8.25 percent and 9.50 percent. Again, for each set of simulations the capital ratio was varied to determine the required amount of capital to allocate to withstand the different default rates. The other assumptions for the stress test were kept the same as in the base case.

The threshold 80 basis point capital ratio was sufficient for default rates of 8.25, 8.50, and 8.75 percent. At a 9.00 percent average default rate, which is only slightly higher than

Fannie Mae's base case, the 80 basis points of capital could be spent, but 83 basis points would be sufficient to survive the scenario. For simulations with default rates of 9.25 percent and 9.50 percent, initial capital ratios of 87 basis points and 91 basis points, respectively, are needed. Treasury did not ask Fannie Mae to run a set of simulations for default rates higher than 9.50 percent.

High default rates for low LTV loans. The credit pricing model was also run employing higher default rates for lower LTV loans. In its structured finance stress test, Standard and Poor's requires that an A-rated pool of mortgages have enough capital behind it to be able to survive default rates of 8 percent for the lower LTV categories (under 80 percent LTV); 10 percent default rates in the lower LTV categories for a AA pool; 15 percent default rates for a AAA pool.

Treasury asked Fannie Mae to run three sets of simulations using the projected lifetime default rates by LTV category from its Texas experience but with:

(1) Default rates set at 5 percent for the three categories under 75 percent LTV.

(2) Default rates set at 8 percent for the lowest three categories.

(3) Default rates set at 10 percent for the lowest four categories.

The results of the three sets of simulations show that initial capital ratios ranging from 95 basis points for the first case to 118 basis points for the last case are required.

Assessment of Fannie Mae's stress test. A stressful economic scenario is characterized by severe economic dislocations and, at least while it is unfolding, uncertainty as to its severity and duration. Fannie Mae has selected one scenario, in hindsight, with assumptions tailored to that one experience. As the above analysis indicates, changing only one of the underlying assumptions, ceteris paribus, can have significant consequences on the capital needed to withstand the scenario. If more than one assumption were altered to reflect a more severe environment, as may be the case in another adverse scenario, the impact on Fannie Mae's capital requirements would be compounded.

The stress test is keyed off Fannie Mae's unseasoned 30-year fixed-rate mortgages, which is the instrument on which it has the most reliable quantitative information related to risk, and which, except only for intermediate (15-year) fixed-rate mortgages, is also the most creditworthy instrument overall.

Much less is known about the potential risk characteristics in a stressful environment of the other instruments in its portfolio and MBS because experience with them is more limited.

Based on the sensitivity analysis of its credit stress test results for its unseasoned 30-year fixed-rate mortgages, the capital potentially needed to withstand an adverse set of conditions for its unseasoned 30-year fixed-rate mortgages could be up to 55 percent more than Fannie Mae had allocated to unseasoned 30-year fixed-rate mortgages in the derivation of its capital guidelines.

Finally, the capital ratio required to be allocated to the pool of unseasoned 30-year fixed-rate mortgages to prevent capital from being depleted in the various simulations leaves no cushion, as the level of capital at low points in the simulations approach zero.

Fannie Mae guidelines. For the purposes of reviewing its own capital adequacy, Fannie Mae has developed a set of risk-based capital ratios which are applied to the different assets and MBS which comprise its total portfolio. The guidelines call for capital of 0.74% of the principal amount of non-recourse mortgages, both retained and securitized. For mortgages with recourse to the originator, the level is reduced to 0.40%. In addition, to protect against interest rate risk, the guidelines call for additional capital of 2.00% for all balance sheet assets, including the retained mortgage portfolio. Application of these criteria to the year-end balances indicate that Fannie Mae considers itself approximately $1 billion below its optimal capitalization. It should be noted that for the purpose of these guidelines, capital is defined to be the sum of equity and loan loss reserves (primary capital) and, therefore, does not include the $2.3 billion of subordinated debt that is outstanding. Fannie Mae believes that, while it has a shortfall from its optimal capital level, the corporation currently has sufficient capital to weather severe economic conditions. Fannie Mae has stated its intention to add $2 billion to $2.5 billion of new capital by the end of 1991 through a combination of retained earnings and growth in the corporation's loan loss reserves. This amount does not include the possible addition of approximately $500 million from the conversion of equity warrants expiring in February 1991.

While these guidelines are useful for Fannie Mae's management, they would not by themselves be sufficient from the point of view of an outside regulator. Fannie Mae's management may know that it plans to manage carefully its interest rate risk and credit risk exposure; however, guidelines are not the same as an outside discipline which would encourage prudent risk management.

Conclusions and recommendations

By Fannie Mae's own analysis, the corporation needs to raise additional capital to meet unforeseen contingencies and to insulate better the Federal Government from the risks of an insolvency. While Treasury does not believe that the current degree of leverage presents an imminent threat, the Treasury is concerned about its significance for the longer term. For example, a lower rate of inflation in the price of housing than prevailed in the past decade could lead to some deterioration in the credit risk of the mortgage portfolio (both retained and securitized) due to a slowing in the rate of buildup of owner equity in the underlying properties. Consequently, the Treasury concurs with Fannie Mae that prudence requires a higher level of capital to meet today's identified risks and tomorrow's unforeseen risks in order to protect more fully the financial markets and the Federal Government from a potential Fannie Mae failure.

An assessment of capital adequacy for an entity as unique as Fannie Mae must be somewhat subjective. The Treasury's examination of existing regulatory capital standards indicates that none, in their current form, are appropriate for Fannie Mae.

The 20 to 1 HUD ratio requirement, while it is constraining on the corporation's retained portfolio growth, is not an appropriate measure of overall capital adequacy since it does not take into consideration the MBS outstanding. The HUD ratio requirement has no impact on the most substantial and growing portion of Fannie Mae's business.

The commercial bank and thrift risk-based capital requirements do factor the off-balance sheet liabilities, including MBS issued, into the capital computation. However, these measures are not an appropriate capital test for Fannie Mae, for the reasons stated earlier. While the corporation's current substantial shortfall from the risk-based capital standards may represent a cause for concern, the risk-based capital computations do not reflect the substantial financial protection the corporation derives from the future stream of guarantee fee income. Though the timing and amount of these guarantee fee receipts can only be estimated, under all scenarios they provide a significant level of future capital support which must not be overlooked in an evaluation of capital adequacy.

As noted in the discussion of Fannie Mae's stress test, the sensitivity of the model to key variables, such as REO rates, average default rates, and the pattern of default rates, is significant and suggests that if the corporation continues to use this model with assumptions based on its Texas experience to determine its appropriate level of capitalization, a substantial cushion above the capital level determined by the model would be needed. The analysis of Fannie Mae's interest rate risk indicates that, while it is well managed, the large portfolio size requires a prudent level of capital as a cushion. In addition, the prospect that the corporation might enter new lines of business, such as construction lending, that have less well-known risks, or make changes in other significant management policies requires that a capital cushion exist. The rating agencies' (e.g., Standard & Poor's and Moody's) preliminary reviews of Fannie Mae, when the implicit Federal guarantee is excluded, indicate that additional equity capital would be needed to improve upon a low investment grade rating.

The most important functions of a capital standard for Fannie Mae are (1) to provide incentives not imposed by the market for the corporation to manage its risks carefully and (2) to serve as a monitoring device of changes in its financial condition. As discussed earlier, the financial difficulties that Fannie Mae faced and successfully surmounted in the 1980s, which had their roots in business strategies followed in the 1970s, indicate the need for these functions to be performed. A capital standard that makes conceptual sense for Fannie Mae would include a measure of interest rate risk and credit risk for different types of assets, both on and off the balance sheet and would also recognize the substantial buffer to adversity that the continuous stream of guarantee fee income provides in addition to balance sheet capital.

Given the disruption to capital markets that a potential financial collapse of Fannie Mae would cause and the strong pressure this would put on the Congress to pass rescue legislation, the Treasury believes that a combination of regulatory oversight and a capital adequacy standard that is tailored to the unique nature of Fannie Mae's business are necessary. The body exercising the regulatory responsibility would need to be flexible and knowledgeable enough to adapt to a rapidly changing marketplace. While it has not been determined what an appropriate capital standard should be for Fannie Mae, any capital adequacy standard applicable to Fannie Mae should be structured both to provide an adequate protective cushion against adversity and to provide incentives for Fannie Mae to manage its risks prudently.

Table 18
Fannie Mae Capital Components

($ millions, year-end)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Stock & Additional Paid-in Capital	642	642	716	724	724	832	913	1,289	1,294	1,307
Retained Earnings	670	440	239	278	196	179	269	617	1,067	1,771
Less Treasury Stock at Cost	(2)	(2)	(2)	(2)	(2)	(2)	0	(95)	(101)	(87)
Equity Capital	1,310	1,080	953	1,000	918	1,009	1,182	1,811	2,260	2,991
Primary Capital	1,446	1,184	1,086	1,133	1,034	1,154	1,435	2,137	2,642	3,446
Subordinated Debt	1,286	1,286	1,544	1,538	2,185	2,108	1,820	2,097	2,626	2,265
Reserves for Loan Losses	136	104	133	133	116	145	253	326	382	455
Supplemental Capital	1,422	1,390	1,677	1,671	2,301	2,253	2,073	2,423	3,008	2,720
Total Capital	2,732	2,470	2,630	2,671	3,219	3,262	3,255	4,234	5,268	5,711
Balance Sheet Assets*	58,015	61,681	73,109	78,500	87,895	99,188	99,795	103,655	112,490	124,540
Mortgage-Backed Securities (MBS)**	0	717	14,450	25,121	36,215	54,987	97,174	139,960	178,250	216,512
Total Balance Sheet Assets & MBS	58,015	62,398	87,559	103,621	124,110	154,175	196,969	243,615	290,740	341,052
On- and Off-Balance Sheet Breakdown										
Balance Sheet Assets	100%	99%	83%	76%	71%	64%	51%	43%	39%	37%
Mortgage-Backed Securities	0%	1%	17%	24%	29%	36%	49%	57%	61%	63%

*Balance sheet assets are adjusted by adding back in loan loss reserves.

**This is balance after deducting for Fannie Mae MBS in portfolio.

Source: Treasury calculations based on data supplied by Fannie Mae reflecting restatements for FAS 91.

Table 19
Fannie Mae Growth Rates

(%, year-end over year-end)

	1981	1982	1983	1984	1985	1986	1987	1988	1989
Stock & Additional Paid-in Capital	0	12	1	0	15	10	41	0	1
Retained Earnings	-34	-46	16	-29	-9	50	129	73	66
Equity Capital	-18	-12	5	-8	10	17	53	25	32
Primary Capital	-18	-8	4	-9	12	24	49	24	30
Subordinated Debt	0	20	-0	42	-4	-14	15	25	-14
Reserves for Loan Losses	-24	28	0	-13	25	74	29	17	19
Supplemental Capital	-2	21	-0	38	-2	-8	17	24	-10
Total Capital	-10	6	2	21	1	-0	30	24	8
Balance Sheet Assets	6	19	7	12	13	1	4	9	11
Mortgage-Backed Securities (MBS)	--	1915	74	44	52	77	44	27	21
Total Balance Sheet Assets & MBS	8	40	18	20	24	28	24	19	17

Source: Treasury calculations based on data supplied by Fannie Mae.

Table 20
Fannie Mae Capital Ratios

(%, year-end)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Equity Capital Ratios										
Equity capital to assets	2.26	1.75	1.30	1.27	1.04	1.02	1.18	1.75	2.01	2.40
Equity capital to MBS	---	150.63	6.60	3.98	2.53	1.83	1.22	1.29	1.27	1.38
Equity capital to assets & MBS	2.26	1.73	1.09	0.97	0.74	0.65	0.60	0.74	0.78	0.88
Total Capital Ratios										
Total capital to assets	4.71	4.00	3.60	3.40	3.66	3.29	3.26	4.08	4.68	4.59
Total capital to MBS	---	344.49	18.20	10.63	8.89	5.93	3.35	3.03	2.96	2.64
Total capital to assets & MBS	4.71	3.96	3.00	2.58	2.59	2.12	1.65	1.74	1.81	1.67
Other Ratios										
Primary capital to assets & MBS	2.49	1.90	1.24	1.09	0.83	0.75	0.73	0.88	0.91	1.01
Supplemental capital to total capital	52.05	56.28	63.76	62.56	71.48	69.07	63.69	57.23	57.10	47.63
Loan loss reserves to assets & MBS	0.23	0.17	0.15	0.13	0.09	0.09	0.13	0.13	0.13	0.13

Source: Treasury calculations based on data supplied by Fannie Mae.

Table 21
Fannie Mae Risk-Weighted Balance Sheet

As of December 31, 1989
($ millions)

		Under Commercial Bank Rule		Under Thrift Rule	
	Amount	Risk Weighting	Adjusted Amount	Risk Weighting	Adjusted Amount
Balance Sheet Mortgages					
1-4 Family	88,824	50%	44,412	50%	44,412
Multifamily	4,065	100%	4,065	100%	4,065
Second	1,614	100%	1,614	100%	1,614
Government insured/guaranteed	16,218	20%	3,244	20%	3,244
Unamortized Discount & Loan Fees	(2,740)	Weighted	(1,303)	Weighted	(1,303)
Total Balance Sheet Mortgages	107,981		52,031		52,031
Other Balance Sheet Assets					
Cash	94	0%	0	0%	0
Investments	11,776	20%/100%	5,361	20%/100%	5,361
Accrued interest & Swaps receivable	2,864	20%/100%	978	20%/100%	978
Real estate owned (net)	448	100%	448	200%	896
Swaps portfolio*	---	20%/50%	126	20%/50%	126
Other assets	1,377	100%	1,377	100%	1,377
Total Other Balance Sheet Assets	16,559		8,290		8,738
Total Balance Sheet Assets	124,540		60,321		60,769
Mortgage-Backed Securities					
1-4 Family	196,732	50%	98,366	50%	98,366
Multifamily	8,673	100%	8,673	50%/100%	7,313
Government insured/guaranteed	11,107	20%	2,221	20%	2,221
Total MBS	216,512		109,260		107,900
Total Balance Sheet Assets & MBS	341,052		169,581		168,669

Detail may not sum due to rounding.

*The commercial bank and thrift risk-based capital guidelines require that a credit equivalent amount be calculated for off-balance sheet items, such as swaps, and be included in risk-weighted assets. The credit equivalent amount according to these rules is $602 million.

Source: Treasury calculations based on data supplied by Fannie Mae.

Risk-Based Capital Ratio

Regulatory Capital	Under Commercial Bank Rule	Under Thrift Rule
Tier 1 Capital	2,991	2,991
Tier 2 Capital	1,954	2,170
Total Capital Base	4,945	5,161
Total Capital Base as percentage of Total Balance Sheet Assets & MBS	2.92%	3.06%

Table 22
Capital Required Under
Commercial Bank and Thrift Risk-Based Capital Standards

As of December 31, 1989
($ millions)

	Commercial Bank Rule	Thrift Rule	Current Thrift Rule*
Risk-Adjusted Amount of Total On- & Off-Balance Sheet Items			
Total Balance Sheet Assets	60,321	60,769	60,769
Mortgage-Backed Securities (MBS)	109,260	107,900	107,900
Total Risk-Adjusted Amount	169,581	168,669	168,669
Required Capital			
Tier 1 Capital (4%)	6,783	6,747	5,397
Total Capital (8%)	13,566	13,494	10,795
Regulatory Capital Held As of December 31, 1989			
Tier 1 Capital	2,991	2,991	2,991
Tier 2 Capital (allowable)	1,954	2,170	2,170
Total Regulatory Capital Held	4,945	5,161	5,161
Total Capital Shortfall	8,621	8,333	5,634
Increase in Capital**			
Tier 1 Capital (minimum)	3,792	3,756	2,406
Subordinated Debt (maximum)***	1,677	4,577	3,227
Other than Subordinated Debt	2,937	--	--
Minimum Necessary Increase in Total Capital	8,405	8,333	5,634

Detail may not add due to rounding.

*Until December 30, 1990, the thrift rule is 80% of the final capital requirement.

**The increase in capital takes into consideration capital currently held but which is not permissible to meet the risk-based capital standard.

***The commercial bank rule limits subordinated debt to 50% of T1C. The thrift rule does not put a limit specifically on subordinated debt other than to limit T2C to 100% of T1C. Thus, for the thrift rule, the increase in other than T1C may be accomplished completely with subordinated debt or with capital other than subordinated debt.

Source: Treasury calculations based on data supplied by Fannie Mae.

Table 23
Capital Required Under
Commercial Bank and Thrift Risk-Based Capital Standards
After Credit for Interest Rate Risk

As of December 31, 1989
($ millions)

	Commercial Bank Rule	Thrift Rule	Current Thrift Rule*
Risk-Adjusted Amount of Total On- & Off-Balance Sheet Items			
Total Other Balance Sheet Assets	60,321	60,769	60,769
Mortgage Backed Securities (MBS)	109,260	107,900	107,900
Total Risk-Adjusted Amount	169,581	168,669	168,669
Capital Required Against:			
Other Balance Sheet Assets (8%)	4,826	4,862	3,889
Mortgage-Backed Securities (6%)	6,556	6,474	5,179
Total Required Capital	11,381	11,336	9,068
Regulatory Capital Held As of December 31, 1989			
Tier 1 Capital	2,991	2,991	2,991
Tier 2 Capital (allowable)	1,954	2,170	2,170
Total Regulatory Capital Held	4,945	5,161	5,161
Total Capital Shortfall	6,436	6,175	3,907
Increase in Capital**			
Tier 1 Capital (minimum)	2,700	2,677	1,543
Subordinated Debt (maximum)***	1,130	3,498	2,364
Other than Subordinated Debt	2,390	--	--
Minimum Necessary Increase in Total Capital	6,220	6,175	3,907

Detail may not add due to rounding.

*Until December 30, 1990, the thrift rule is 80% of the final capital requirement.

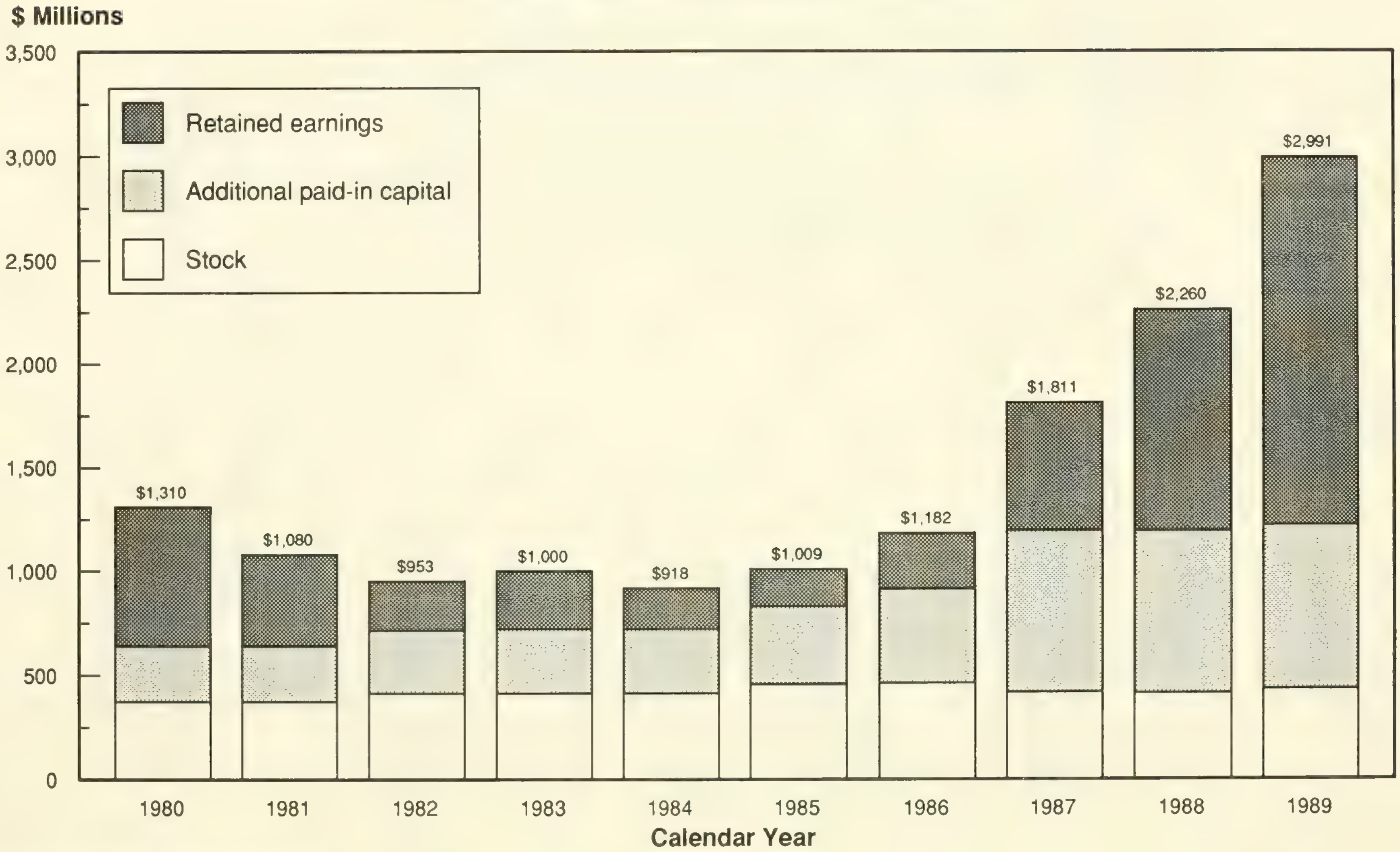
**The increase in capital takes into consideration capital currently held but which is not permissible to meet the risk-based capital standard.

***The commercial bank rule limits subordinated debt to 50% of T1C. The thrift rule does not put a limit specifically on subordinated debt other than to limit T2C to 100% of T1C. Thus, for the thrift rule, the increase in other than T1C may be accomplished completely with subordinated debt or with capital other than subordinated debt.

Source: Treasury calculations based on data supplied by Fannie Mae.

Chart 3

Fannie Mae Equity Capital

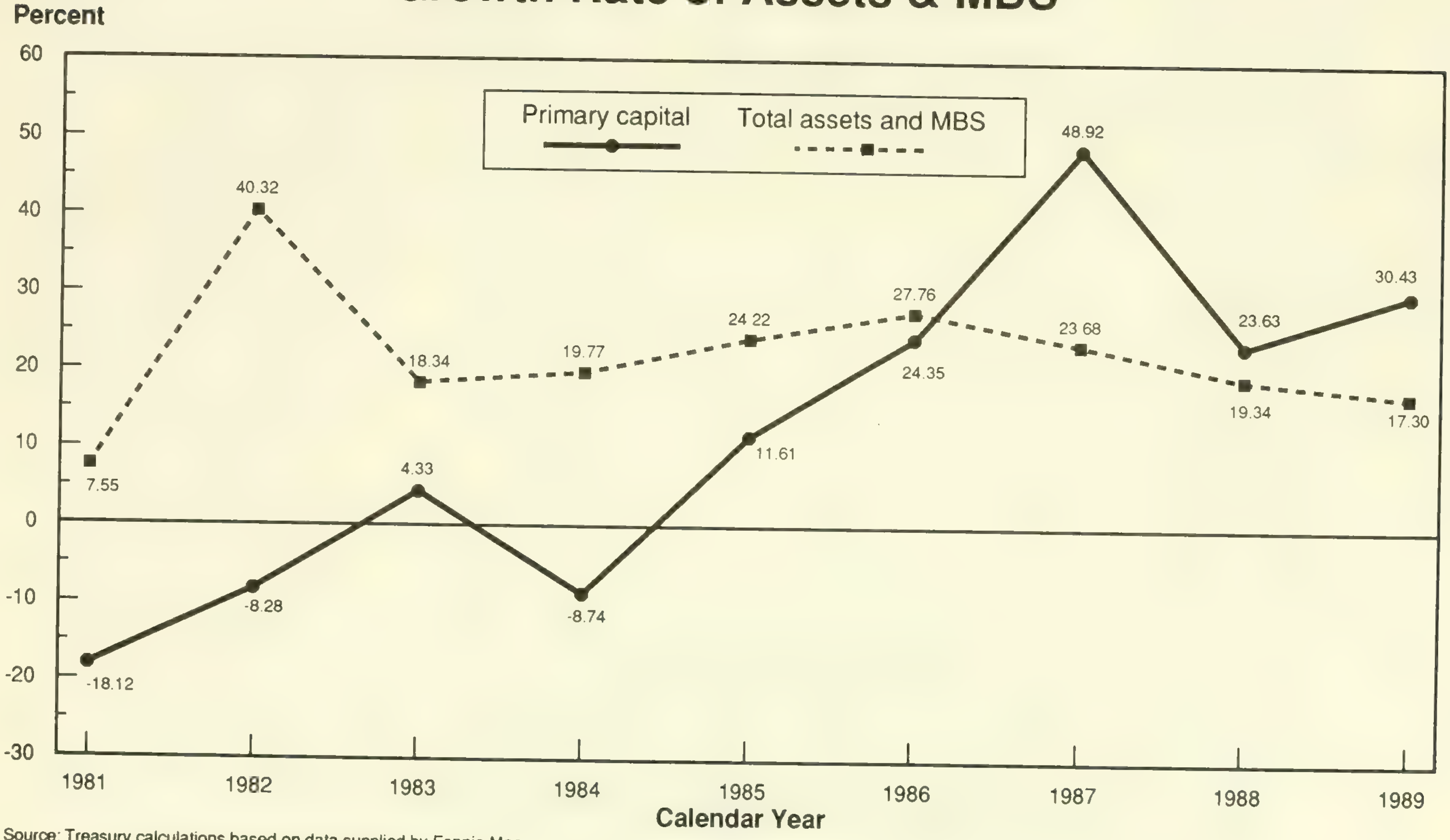


Note: Common stock is less treasury stock.

Source: Treasury calculations based on data supplied by Fannie Mae.

Chart 4

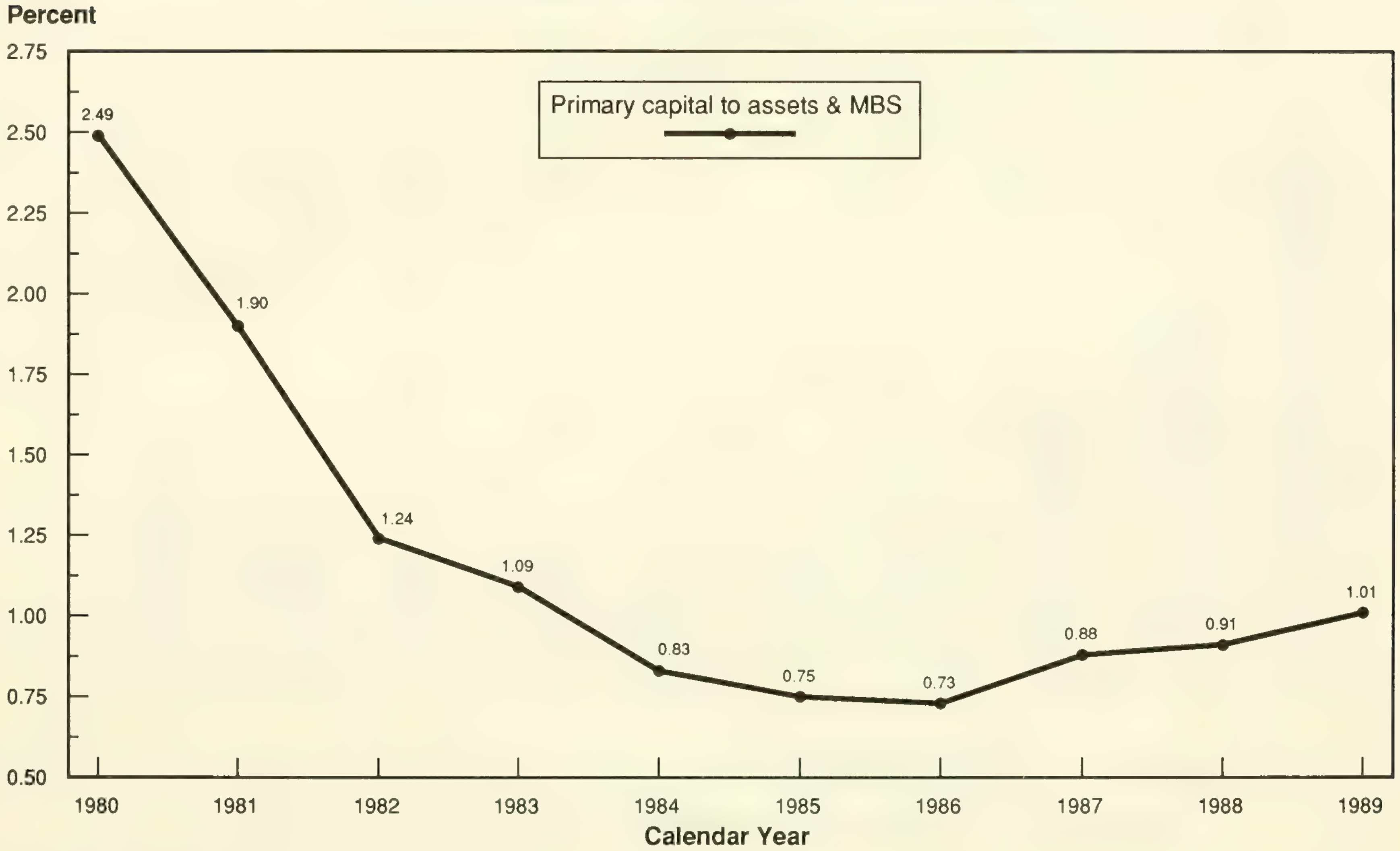
Fannie Mae Growth Rate of Primary Capital vs. Growth Rate of Assets & MBS



Source: Treasury calculations based on data supplied by Fannie Mae.

Chart 5

Fannie Mae Primary Capital Ratio



Source: Treasury calculations based on data supplied by Fannie Mae.

Quality and Timeliness of Information

Overview

Fannie Mae makes extensive information available to the public and the Federal government in a manner generally consistent with other government-sponsored enterprises. However, its close counterpart, Freddie Mac, recently began publishing, on a quarterly basis, its mark-to-market balance sheet together with a transition analysis that permits an assessment of how its market value changes in response to changes in interest rates.

Information to the public

Fannie Mae publishes the types of information that stockholder-owned U.S. corporations usually make available to investors. This information includes:

(1) annual reports detailing Fannie Mae's audited financial statements and quarterly unaudited statement updates;

(2) periodic information statements describing (a) recent events and operating results, (b) new issues of debt, and (c) new mortgage-backed securities; and

(3) quarterly investors/analysts reports which provide summary audited and unaudited information concerning Fannie Mae's operations in a historical format.

The quarterly investors/analysts report contains a detailed comprehensive summary of Fannie Mae's activities, and Fannie Mae has received recognition in the financial industry. The information listed above is sufficient to adequately inform investors of the general financial condition of Fannie Mae, but it does not include other relevant data that influences credit and interest rate risk, such as defaults or foreclosures by product and by LTV ratio.

Information to the Federal Government

Fannie Mae provides information to several agencies of the Federal Government. On a monthly basis, Fannie Mae supplies mortgage purchase, commitment, and settlement data to HUD. Monthly data on MBS outstanding and outstanding debt are given to Treasury and the Federal Reserve. The Federal Reserve also receives quarterly balance sheet data for its flow-of-funds division, and the Office of Management and Budget receives actual and projected annual balance sheet data for budgetary purposes.

The information given to HUD differs little in content from what is publicly available.

Conclusions and recommendations

Fannie Mae makes information available to the public and the Federal Government in a manner generally consistent with other Government-sponsored enterprises. However, adequate information on Fannie Mae's portfolio and MBS relating to credit risk and interest rate risk that would permit the public or the Federal Government to assess the risk of Fannie Mae's activities is not made available, or it is made available only to its regulator, HUD.

Fannie Mae's counterpart, Freddie Mac has gone one step further, however, by supplying to the public quarterly mark-to-market balance sheet data. Although generally accepted accounting practices (GAAP) have not been developed for market value accounting, Fannie Mae and Freddie Mac's assets are almost all mortgages or MBS for which there is a ready market, and thus the difficulties associated with marking a balance sheet to market are less severe than with other firms.

Fannie Mae and Freddie Mac may have different approaches to marking their balance sheets to market, but it is believed that agreement could be reached, possibly under the auspices of a third party, on a common convention. Then both firms could make publicly available marked-to-market balance sheets with sensitivity analysis to various levels of interest rates. Such information would permit public and Government oversight of the interest rate risks associated with their activities, and would result in a more accurate market valuation for Fannie Mae securities.

The examination of credit risks associated with Fannie Mae's activities suggests that additional information on the characteristics of mortgages that are known to be related to default, such as breakouts of delinquencies and defaults by LTV ratios, seasoning, property type, etc., should be made available to the public, or at least to its implied backer, the Federal Government. Such information would allow more public and Government oversight of Fannie Mae's operations as they relate to credit risk.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to examine the financial safety and soundness of Fannie Mae. The financial markets perceive that there is an implied Federal Government guarantee of Fannie Mae's financial obligations. Treasury's examination focused on the risks associated with Fannie Mae's operations which might expose the Federal Government to unexpected and potentially large outlays, if it were to step in and act on the implied guarantee. Treasury also assessed the adequacy of Fannie Mae's capital as a buffer against such circumstances, given the risks associated with its business. Specifically, Treasury assessed business risk, credit risk, interest rate risk, management and operations risk, and capital adequacy. Treasury also examined the quality and timeliness of the information available to the public and the Federal Government.

Fannie Mae benefitted from the entrance of the "baby boom" generation to the first-time buyer market, inflation, and the growth of the mortgage securitization industry in the 1980s. The bulge in the first-time buyer market had a significant impact on housing demand and the growth of the primary mortgage markets. Housing price inflation had the effect of increasing homeowner equity at a faster pace, reducing the likelihood of mortgage default. The growth of the securitization industry insulated Fannie Mae from cyclical fluctuations in the underlying housing and primary mortgage markets.

Economists are forecasting a slowing in inflation and in the growth of the first-time buyer market in the 1990s. In addition, the expected rate of growth of the securitization of mortgages vis-a-vis the primary mortgage market will slow as the mortgage securitization industry matures in the 1990s. All three factors augur for a slowing in Fannie Mae's overall growth in the next decade, while the expected slowing in the growth of mortgage securitization may expose Fannie Mae more to the fluctuations of the business cycle.

Fannie Mae revised its underwriting standards in 1985 and has set up stringent requirements and monitoring procedures for lenders who sell or service loans, for product quality, and for credit and income qualifications for borrowers. Since then, its serious delinquency and foreclosure rates have significantly improved, but overall they still remain well above Freddie Mac's. Fannie Mae states this is due to more business on its books from the early 1980s than Freddie Mac.

While the revisions to its underwriting standards improved its credit exposure, Fannie Mae's credit risk was also reduced by the surge in house price inflation and by a large volume of mortgage refinancing in 1986 and early 1987. Borrowers refinanced homes when interest rates declined, contributing to a significant decline in the LTV profile (an important credit risk characteristic) of Fannie Mae's outstanding portfolio.

The biggest credit risk to Fannie Mae is a regional or national economic slowdown. Although it is nationally diversified, and its purchase activity is largely determined by the distribution of activity in the primary markets, about 25 percent of its mortgages and MBS outstanding are on properties in California and 50 percent are concentrated in five states. In addition, Fannie Mae (with Freddie Mac) dominates the secondary mortgage market, and it cannot withdraw in adverse conditions because its charter requires it to maintain a presence in the market. If a severe economic slowdown occurs, Fannie Mae's default experience will increase significantly, and its ability to price credit risk accurately will be impaired.

Fannie Mae closely monitors regional economic developments and the credit performance of its mortgage products in 56 major markets. It produces extensive analytical performance reports on a quarterly basis that examine regional conditions, forecasts, and the performance of lenders and existing mortgages. Thus Fannie Mae would likely discern regional variations and adjust underwriting, mortgage, or lender requirements. However, there is a time lag involved in detecting a change in an underlying economic trend, and both the severity and duration of a downturn usually remain unknown until well after it has unfolded. In the meantime, Fannie Mae's Charter would require it to maintain a presence in the market and to continue its presence as conditions deteriorate.

Fannie Mae's primary exposure to interest rate risk is determined by the size of its portfolio and the volume of debt outstanding used to fund its portfolio. After its experience in the early 1980s, when losses on its portfolio averaged more than $1.3 million per day for more than a year, Fannie Mae developed an asset/liability approach to try to insulate its earnings from changes in interest rates. The plan involved matching the interest sensitivities of its portfolio and the debt used to fund it. More recently, it has expanded on that strategy by broadening the range of potential interest rate environments.

The difficulties of trying to insulate a portfolio of mortgages funded with debt from large interest rate changes is revealed by the results of Fannie Mae's mark-to-market balance sheet. For sizable interest rate changes (about +/- 300 basis points), the net market value of its mortgage portfolio and debt used to finance it turns negative. For even larger interest rate changes (about +/-500 basis points), Fannie Mae's market net worth turns negative.

Fannie Mae has competent management and potentially excellent MIS systems. Treasury's experience in conducting this study, however, disclosed that the documentation of procedures and models, and its ability to use its MIS systems effectively, need improvement. At the time of the study, there was no documentation for Fannie Mae's credit risk pricing model, nor was there written documentation for Fannie Mae's credit risk stress test, which employs the credit risk pricing model.

Treasury's experience in acquiring data for the study also disclosed that, while Fannie Mae's new LASER data system is in operation, Fannie Mae has not yet developed the capability to query the system for data in a consistent or timely manner.

By Fannie Mae's own analysis, the corporation needs to raise additional capital to meet unforeseen contingencies and to insulate better the Federal Government from the risks of an insolvency. While Treasury does not believe that the current degree of leverage presents an imminent threat, the Treasury is concerned about its significance for the longer term. For example, a lower rate of inflation in the price of housing than prevailed in the past decade could lead to some deterioration in the credit quality of mortgages. Consequently, the Treasury concurs with Fannie Mae that prudence requires a higher level of capital to meet today's identified risks and tomorrow's unforeseen risks in order to protect more fully the financial markets and the Federal Government from a potential Fannie Mae failure.

An assessment of capital adequacy for an entity as unique as Fannie Mae must be somewhat subjective. The Treasury's examination of existing regulatory capital standards indicates that none, in their current form, are appropriate for Fannie Mae.

A stress test by itself is not an appropriate measure of capital adequacy from the perspective of protecting the Federal Government from excessive risk exposure. In addition, Fannie Mae's stress test is very sensitive to certain critical assumptions.

The most important functions of a capital standard for Fannie Mae are (1) to provide incentives for the corporation to manage its risks carefully and (2) to serve as a monitoring device of changes in its financial condition. As discussed earlier, the financial difficulties that Fannie Mae faced and successfully surmounted in the 1980s, which had their roots in business strategies followed in the 1970s, indicate the need for these functions to be performed.

Accordingly, to insulate the Federal Government adequately from Fannie Mae's risks, a combination of regulatory oversight and an effective capital adequacy requirement are necessary. Any regulatory capital rule would, by necessity, be a hybrid of existing standards custom-designed to the corporation's operations. The body exercising the regulatory responsibility would need to be flexible and knowledgeable enough to adapt to a rapidly changing marketplace. While it has not been determined what an appropriate capital standard should be for Fannie Mae, any capital adequacy standard applicable to Fannie Mae should be structured both to provide an adequate protective cushion against adversity and to provide incentives for Fannie Mae to manage its risks prudently.

ENDNOTES

1. Forbes Magazine, April 30, 1990. The only financial companies ahead of Fannie Mae are #1 Citicorp and #4 American Express.

2. Much of the discussion of the history of Fannie Mae relies on information provided by Fannie Mae to Treasury and on Harry R. Bivens' Background and History of the Federal National Mortgage Association (Fannie Mae, 1969).

3. The loan limits are to housing price indices published by the Federal Housing Finance Board. For 1990, Fannie Mae set the maximum original loan amount at $187,450 for a conventional mortgage loan on one-family dwellings, except for loans secured by properties in Alaska and Hawaii. Higher principal balance limits apply to loans from Alaska and Hawaii and to secured by properties with two or more family dwelling units.

4. The payment characteristics of REMICs are similar to a Collateralized Mortgage Obligation (CMO) from an investor's viewpoint. A CMO is a mortgaged-backed bond -- a debt instrument collateralized by a pool of mortgages -- that consists of different classes of certificates maturing at different dates. However, tax treatment favors REMICs.

5. In transition to private ownership, Fannie Mae relied on interim borrowing from the Treasury. Effective July 1, 1969, Fannie Mae established a line of credit with a nationwide group of commercial banks. Since that time, Fannie Mae has not borrowed from the Treasury. Federal National Mortgage Association Annual Report, 1969.

6. The only area where Fannie Mae is directly involved in loan servicing is in its multifamily FHA-insured loan portfolio. Fannie Mae owns and services approximately $4.4 billion of FHA-insured multifamily loans (most of which are secured by subsidized housing projects).

7. Fannie Mae issues four guides: "Selling", "Servicing", "Multifamily", "MBS Selling and Servicing." The following discussion summarizes the eligibility requirements, performance standards, and warranties.

8. Looking at the breakout of portfolio and MBS to derive the percent covered only by MI, we have

	Portfolio	MBS	Total
FHA/VA	14.0%	5.8%	8.2%
MI(ex rec. & col.)	22.1	11.2	14.4
Recourse(inc. MI)	8.9	27.1	21.8
Collateral(inc.MI)	0.0	13.8	9.7
Total	45.0%	57.9%	54.1%

9. Public statement by Timothy Howard, EVP and CFO, on December 10, 1989 at Fannie Mae's Investor Analysts Conference.

10. Fannie Mae has historical loan-level data on portfolio purchases, liquidations, and defaults for a portion of its portfolio prior to 1987, and has no loan-level data on its MBS prior to 1988.

Fannie Mae has always collected loan-level detail when loans are purchased or securitized. This detail includes the LTV ratio, property location, occupancy status, and other factors that affect credit risk. However, once the loans were purchased or securitized, Fannie Mae did not receive payment status reports (e.g., 30-, 60-, 90-day delinquencies) for each loan. Instead, lenders reported summary data. For example, if a lender serviced 100 Fannie Mae loans, the lender reported the total number of loans that were 30, 60, or 90 days delinquent without indicating which particular loans were involved.Fannie Mae did receive loan-level detail when a loan was liquidated (e.g., a foreclosure). However, not all of this data is currently available. The percent of the portfolio on which Fannie Mae has historic loan-level detail ranges, depending on the year, from about 35 percent to 81 percent of its total portfolio holdings.

Since Fannie Mae fully converted to its LASER reporting system in 1989, it now has complete loan-level data for all single-family loans for its portfolio and MBS issues.

11. The data in Table 9, as with significant amounts of other data included in the credit risk section of this study, was given to Treasury by Fannie Mae on April 27, 1990, along with Fannie Mae's comments on a draft of this study. This data provided by Fannie Mae on April 27 replaced previous versions of data that Fannie Mae had provided, the last of which had been incorporated in the draft sent to Fannie Mae. Fannie Mae states that earlier versions of data provided as accurate to Treasury contained errors. Treasury has not verified the errors of the previous versions, or the reliability of the data that is now included in this study.

In the case of Table 9, the share of portfolio purchases and MBS issued in the highest LTV category (over 90 percent) was significantly higher in previous data provided by Fannie Mae.

12. For example, if the ARM were based on the 1-year Treasury rate plus a margin of 200 basis points, and if the Treasury rate were 9.00 percent, the fully indexed ARM rate would be 11.00 percent. However, the initial teaser rate on an ARM for the first year might be only 8.00 percent.

13. Comparable data on Fannie Mae's MBS delinquency and in foreclosure rates prior to 1985 are not available.

14. Fannie Mae statement to the Treasury on April 27, 1990.

15. On a total net income basis, Fannie Mae's income figures for the early 1980s were:

1980	$ 14	million
1981	(190)	"
1982	(105)	"
1983	49	"
1984	(71)	"

16. Fannie Mae states that other strategies utilized prior to 1981 also affected losses. For example, prior to 1981 Fannie Mae purchased loans under an optional delivery commitment system whereby lenders bought an option to put mortgages to Fannie Mae at a fixed price for four or months, with some options lasting as long as twelve months. When rates rose, lenders would put low yielding loans to Fannie Mae. As a result, the yields on the mortgages purchased through these commitments would fall below the yields on the debt issued to fund the purchases. Moreover, the fees Fannie Mae charged for these commitments did not compensate the corporation for the risks involved.

17. Dividing standard Macaulay duration by one plus the periodic yield produces a statistic called modified duration. Modified duration is a measure of the price elasticity of a security to changes in its yield.

18. However, from a credit risk point of view, the relatively new ARM instruments were offered in many forms, many of which subsequently proved more risky. Most notable were "teaser rate" ARMs, or those with initial rates that contained 200 to 300 or more basis point discounts for the first one to three years. Fannie Mae did charge higher fees for ARMs in an attempt to account for the higher risk, but because of the short experience with ARMs, pricing for credit risk was relatively inexact.

19. Fannie Mae makes a specific allocation of a portion of its short-term debt to funding its liquid investment portfolio. The remainder is treated as funding its mortgage portfolio.

20. The relationship is represented by a parabola that is convex to the origin. That is, when interest rates are low, a given change in yield will have a relatively larger impact on the price of the security than when interest rates are high. The degree to which the impact on price of a given change in yield varies is determined by the degree of convexity of the parabola. Thus dissimilarities in the degree of convexity of the relationship between interest rates and prices of different securities, in addition to the location of the curves relating prices to interest rates for the securities, accounts for the diverging behavior of the durations of securities at different levels of interest rates.

21. For well-developed products, pricing is determined in the secondary mortgage markets, but the risk/return profiles are determined using the MPS model. The portfolio pricing model is more heavily used for pricing mortgages obtained through negotiated transactions.

22. That is, Fannie Mae will buy the mortgage, but then pool it with other mortgages and sell the pool. This is Fannie Mae's Buy/Sell program.

23. In both scenarios, however, Fannie Mae assumed that prepayment rates on 30-year fixed-rate mortgages never fell below 83 percent of the PSA prepayment model for unseasoned product and 100 percent for seasoned product. The prepayment floor for ARMs was 133 percent of the PSA model. Historical experience, however, shows that prepayments could fall below those rates for some period of time. Thus Fannie Mae also ran the plus 600 basis point test assuming a floor of 65 percent of PSA for fixed-rate mortgages, and 93 percent of PSA for ARMs. The result of this test showed lower but still positive net interest income throughout the five-year forecast period.

24. Treasury did not conduct an extensive analysis of the assumptions underlying Fannie Mae's interest rate stress test, or a sensitivity analysis of the results of the test.

25. At present these reviews take place three times per year; Fannie Mae is considering increasing the frequency to four times per year.

26. LASER can store and access as many as 240 records per loan. Examples of reports that can be generated by LASER include delinquency reports by state, by product, by originating

lender, by loan-to-value ratio, or by origination date. LASER enables Fannie Mae to report monthly to its loan servicers regarding discrepancies between projected and actual cash received, loan status, erroneous interest rate, or missing or erroneous payment changes on adjustable rate loans.

27. Other initiatives to upgrade computer facilities that have already been completed include systems related to pooling and tracking MBS, to reporting and tracking loan foreclosures, and to managing multifamily loans.

28. Fannie Mae offered examples of how the initiatives achieved these goals. LASER is supposed to contribute to greater accuracy of information by providing a third opportunity for review and edit on loan commitments and purchases. MORNET is supposed to improve data accuracy and security by automating data transmission between Fannie Mae and its counterparts.

29. Under bank and thrift capital rules, equity capital is classified as Tier 1 capital.

30. Under the bank and thrift capital standards these other types of capital would be deemed Tier 2 capital, except that subordinated debt has not been discounted for remaining term to maturity.

31. Equity capital or Tier 1 capital is the sum of common stock, additional paid-in capital, and retained earnings less the value of treasury stock.

32. Primary capital is equity capital plus loan loss reserves.

33. Total capital is equity capital with the addition of subordinated debt and loan loss reserves.

34. The Office of Thrift Supervision's rule provides a transition treatment for subordinated debt issued before a specified date. We did not apply this transition rule in our analysis.

35. The minimum necessary increases in total capital shown on Tables 22 and 23 are less than the total capital shortfall, because as Tier 1 capital is increased, the amount of allowable subordinated debt and Tier 2 capital increases. In other words, amounts that are currently held but disallowed at present capitalization become allowable if equity is increased. Also, the maximum amounts of subordinated debt increase that can be counted as capital under the commercial bank capital rules shown on the tables

are based on the minimum required increases in equity capital.

36. This is the reduction the Office of Thrift Supervision has proposed once an additional interest rate risk capital requirement is in effect.

37. Fannie Mae supports the use of 72 percent for the REO sales price by weighting its national average REO sales price by the number of foreclosures from the same sample of its Texas 1981-1982 loans that it used to compute the cumulative default rates. (Most of its 1981-1982 Texas loans were sold to Fannie Mae and reported not on a loan-level basis, but rather on a summary basis, and are not included in the sample.) Its actual national REO sales price was higher than 72 percent in 1983-1985, but since 1985, it has averaged 65 percent or less.

The weights Fannie Mae assigns in the computation of the average REO sales price for its Texas experience give greater weight to the early 1980s when REO sales prices were higher and less weight to the last few years when REO sales prices were significantly lower. This is because the computation for weighting the Texas REO sales price was conducted in 1989 and used only the sample of its Texas loans. At the time, there were only a few loans in foreclosure from the original sample, and no weight was given to potential future foreclosures.

Using Fannie Mae's actual REO statistics instead, more than 30 percent of the total number of properties acquired in 1988 and 1989 were from Texas, and of those, more than 18 percent had been originated in 1981 and 1982. Home prices, as measured by the median home price in Houston, were still down 30 percent in late 1988 versus the peak in 1983, and REO prices usually fall below general market home prices. Thus Fannie Mae's recent national average REO sales price, which is significantly lower than 72 percent, is still heavily weighted by its Texas loans.

APPENDIX B

FEDERAL HOME LOAN MORTGAGE CORPORATION

DESCRIPTION

Creation and purpose

The Federal Home Loan Mortgage Corporation, known as Freddie Mac, was chartered on July 24, 1970 by Title III of the Emergency Home Financing Act of 1970 (EHFA). [Pub. L. No. 91-351] Together with Fannie Mae, Freddie Mac dominates activity in the secondary market for conventional residential mortgages which fall within their loan purchase limits. Freddie Mac acts as a conduit to facilitate the flow of investment dollars from capital market investors to mortgage lenders. At the end of 1989, Freddie Mac had securitized and purchased for its retained portfolio about $295 billion in mortgages.

EHFA was designed to increase the availability of mortgage credit. At the time, thrifts originated as much as two-thirds of all home mortgages, with a majority of these loans being conventional (non FHA/VA). Because of a chronic regional mismatch between savings deposits and the demand for mortgage credit at thrift institutions, Congress decided to create a more efficient mechanism to supply funds to thrifts experiencing excess demand for mortgage credit.

Among the major provisions of EHFA, Congress established Freddie Mac within the Federal Home Loan Bank System to provide a secondary market for conventional home mortgages. At the same time, EHFA provided the already existing Federal National Mortgage Association (Fannie Mae) with parallel authority to deal in conventional mortgages.

The Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA) [Pub. L. No. 101-73] explicitly stated Freddie Mac's statutory purpose as follows:

> (1) To provide stability in the secondary market for home mortgages;
>
> (2) To respond appropriately to the private capital markets; and
>
> (3) To provide ongoing assistance to the secondary market for home mortgages by increasing the liquidity of mortgage investments and improving the distribution of investment capital available for home mortgage financing.

The goal of providing secondary market assistance includes providing assistance with respect to mortgages securing housing for low- and moderate-income families provided such activities involve a reasonable economic return to Freddie Mac.

Business activities

Freddie Mac purchases mortgage loans from individual lenders, groups these mortgages into pools, and then sells mortgage-backed pass-through securities collateralized by the mortgages. Freddie Mac holds a small portfolio of mortgages (relative to its outstanding purchased mortgages) in its investment portfolio which it funds primarily with general obligation debt. Freddie Mac contracts with outside institutions, usually loan originators, to service the loans that it purchases.

Mortgage purchases. Freddie Mac purchases single-family, fixed-and adjustable-rate first lien mortgages; single-family second mortgages; and multifamily mortgages. Freddie Mac is subject to maximum loan purchase amounts for first lien single-family and multifamily mortgages, as well as second lien mortgages. For 1990, the loan purchase limit for first mortgage single-family properties was set at $187,450. The loan limits are reset each year and are tied to housing price indices calculated by the Federal Housing Finance Board.

In addition to maximum loan purchase amounts, Freddie Mac's charter prohibits it from purchasing loans with loan-to-value ratios exceeding 80 percent, unless the seller retains at least a 10 percent participation in the mortgage or provides private mortgage insurance (MI), or repurchases mortgages upon default.

During 1989, Freddie Mac purchased 992,542 mortgages for a total of $78.6 billion, for an average of $79,191 per mortgage. Purchases are made through its Cash and Guarantor Programs for standard mortgages (mortgages that meet Freddie Mac's underwriting standards), and its Structured Transactions Desk for mortgages not meeting its normal criteria.

Under its Cash Program, Freddie Mac purchases mortgages on a loan-by-loan basis. On each business day, Freddie Mac posts a required net yield at which it is willing to pay the seller in cash the par price for the mortgage. Mortgages purchased under the Cash Program are used primarily for mortgage-backed securities, but some are kept by Freddie Mac for its own investment portfolio.

Under the Guarantor Program, a seller originates and pools a group of loans according to Freddie Mac's pooling standards. In exchange for the pool of mortgages, Freddie Mac issues (or swaps) directly to the lender mortgage participation certificates (PCs) backed by the same mortgages. The seller may elect to sell its pool of mortgages with or without full recourse. If mortgages are sold with recourse, the seller retains the default risk on the mortgages. If they are sold without recourse, Freddie Mac assumes the default risk and charges a higher guarantee fee for doing so. Freddie Mac makes the majority of its mortgage purchases through the Guarantor Program.

New types of mortgages or significant variations to existing mortgages are purchased through the Structured Transactions Desk. Structured transactions are tailored to meet the specific needs of the customer and of Freddie Mac, and they are arranged at Freddie Mac's corporate headquarters. The minimum size of a structured transaction is $100 million, because of the high costs associated with analyzing the risk characteristics of new types of mortgage products.

Commitments. Freddie Mac purchases mortgages under both programs through the use of mandatory and optional commitments. Under mandatory commitments, Freddie Mac agrees to lock in a specified guarantee fee (for guarantor) or a specified required net yield (for cash) and specified underwriting requirements. Sellers agree to deliver a specified dollar amount of mortgages within a specified time frame. Under an optional commitment, the seller may choose to let the commitment expire unfilled.

Freddie Mac also uses Master Commitments for customers who anticipate delivery of mortgages over a longer time period. A Master Commitment gives the lender the option of selling mortgages under one or both of Freddie Mac's purchase programs. This allows lenders to quickly tailor their transactions throughout the commitment period to changing market conditions. Freddie Mac offers both mandatory and optional Master Commitments. Including Master Commitments, Freddie Mac issued $86.3 billion in purchase commitments during 1989.

Transactions. Freddie Mac conducts two kinds of transactions (purchases). Both types of transactions are done at the regional level. The first type, a "plain vanilla" transaction, involves the purchase of mortgages that meet fully all of Freddie Mac's underwriting standards.

The second type of transaction, a negotiated transaction, involves Master Commitments and contracts entered into between seller/servicers and Freddie Mac in which Freddie Mac's Regional Vice Presidents (RVPs) have the authority to waive certain underwriting requirements. RVPs may only approve waivers in which a precedent has already been established, i.e. Freddie Mac has previously purchased mortgages with similar types of waivers to its underwriting standards. For waivers that have not been previously approved, the RVPs must consult with the home office to obtain approval. About half of Freddie Mac's transactions are negotiated, and most of the negotiated transactions occur under the Guarantor program.

Servicing of mortgages. Freddie Mac does not service the mortgages which it purchases. Instead, it contracts for mortgage servicing with outside institutions who meet Freddie Mac's criteria for servicing mortgages. The servicer is usually the institution which originated and sold the loan to Freddie Mac. Servicers earn a fee for collecting mortgage payments and remitting them to Freddie Mac in a timely fashion.

Financial structure

Freddie Mac finances its mortgage purchases mainly by issuing securities backed by the underlying mortgages and, to a much lesser extent, by issuing general obligation debt. Freddie Mac markets its securities through a retail trading group.[1]

Mortgage-backed securities. Freddie Mac finances the majority of its mortgage purchases with mortgage participation certificates, or PCs, formed under the Cash or Guarantor programs. At the end of 1989, Freddie Mac had $272.9 billion in outstanding PCs. PCs represent undivided interests in a pool of first-lien or second-lien, fixed-rate or adjustable-rate, conventional or FHA/VA mortgages and provide for monthly payment of interest and pass-through of principal based upon collections with respect to the underlying mortgages. Since the mortgages are viewed as being sold from Freddie Mac's point of view, PCs do not appear on its balance sheet. Freddie Mac guarantees timely payment of interest and ultimate payment of principal with respect to the mortgages underlying the PCs. For these guarantees, Freddie Mac receives a fee.

Freddie Mac also issues Giant PCs, which represent interests in a pool consisting of PCs. At the end of 1989, it had $17.1 billion in Giant PCs outstanding (included in the $272.9 billion of outstanding PCs referred to above). Giant PC payments of principal and interest are passed through monthly, on the same date as payments are made on the underlying PCs.

Freddie Mac has been an active participant in the multiclass securities market. At the end of 1989, it had outstanding $2.3 billion in Collateralized Mortgage Obligations (CMOs), $.3 billion in Mortgage Cash Flow Obligations (MCFs), and $2.7 billion in multiclass PCs. Multiclass PCs are PCs issued with a one time option to exercise a put on the securities to Freddie Mac, at par, on a specific date. CMOs, and MCFs are debt securities securitized by mortgages and, as such, are carried on Freddie Mac's balance sheet. Multiclass PCs, because of the put option, are treated as debt securities, and thus, also appear on the balance sheet.

Freddie Mac also had outstanding $47.6 billion in Real Estate Mortgage Investment Conduits (REMICs) at the end of 1989. REMICs are a tax-advantaged trust structure provided for in the 1986 Tax Reform Act. Freddie Mac issues REMICs by resecuritizing existing PCs. CMOs, MCFs, and REMICs are multiclass securities whose cash flows are directed to a series of classes called "tranches." Multiclass securities offer tranches in a range of short, medium, and extended maturities.

General obligation debt. Freddie Mac issues debentures and notes that are general obligations with a specified maturity date. Debentures have a term of at least one year and generally pay interest semi-annually at a fixed-coupon rate. Freddie Mac also has issued floating-rate debentures that pay interest quarterly. Notes are short-term instruments, usually six months or less, and are issued on a discount basis.

Financial statements. Tables 1 and 2 present income and expense statements and balance sheet data for Freddie Mac for the past 10 years. In 1989 Freddie Mac posted record profits of $437 million, the fourth straight year profits increased. Profits fell in 1985 because of the imposition of Federal income tax that year. Net income before taxes has increased for eight straight years. Freddie Mac remained profitable even during the last recession in the early 1980s.

Freddie Mac's total assets have steadily climbed from $5.5 billion in 1980 to $35.5 billion in 1989. The ratio of net portfolio holdings of mortgages to total assets has declined from 91 percent to 60 percent over the same period. Meanwhile, its off balance sheet PCs have grown from $16.9 billion in 1980 to $272.9 billion in 1989.

Organization

The year 1989 brought dramatic change to Freddie Mac. FIRREA broadened Freddie Mac's ownership by creating a new class of voting common stock and changing its corporate governance by dissolving its old board of directors, which were members of the Federal Home Loan Bank Board (FHLBB), and creating a new one which will be controlled by directors elected by the common stockholders. Freddie Mac's internal management structure was also reorganized, in part, to respond better to the needs of a new board of directors.

Ownership. Congress initially made the Federal Home Loan Banks (FHLBanks) direct owners. Therefore, the thrift industry, which owned the FHLBanks, were indirect owners of Freddie Mac.

Table 1
Freddie Mac Statements of Income

($ millions)

For the years ended December 31:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Income from total portfolio										
Interest & discount on mortgage loans	438	561	543	615	1,011	1,349	1,336	1,114	1,442	1,870
Interest on investments	32	30	78	119	176	254	357	627	833	1,169
Management and guarantee income	23	36	77	132	158	188	301	472	465	572
Total income from portfolio	492	627	698	866	1,345	1,791	1,994	2,213	2,740	3,611
Interest and related expenses										
Long-term debt expense	(337)	(413)	(406)	(496)	(688)	(905)	(1,106)	(940)	(788)	(990)
Short-term debt expense	(79)	(144)	(185)	(113)	(286)	(386)	(288)	(482)	(995)	(1,532)
Total interest expense	(417)	(557)	(591)	(609)	(974)	(1,291)	(1,394)	(1,422)	(1,783)	(2,522)
Net interest margin on portfolio	77	70	107	257	371	500	600	791	957	1,089
Provision for mortgage losses	(23)	(17)	(26)	(46)	(54)	(79)	(120)	(175)	(204)	(260)
Administrative expenses	(26)	(30)	(37)	(53)	(71)	(81)	(110)	(150)	(194)	(217)
Other income	6	8	16	6	21	22	72	14	(5)	16
Net income before taxes	34	31	60	164	267	362	442	480	554	628
Taxes*	--	--	--	--	--	(164)	(195)	(179)	(173)	(191)
Extraordinary items	--	--	--	(4)	--	10	--	--	--	--
Net income after taxes	34	31	60	160	267	208	247	301	381	437

*Income subject to Federal taxation beginning January 1, 1985.

Source: Federal Home Loan Mortgage Corporation annual reports.

Table 2
Freddie Mac Balance Sheets

($ millions)

As of December 31:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Assets:										
Mortgage Assets (See Note 1)										
Single Family:										
Conventional										
Fixed Rate – 15 year	0	0	0	163	146	852	789	1,892	2,174	3,349
Fixed Rate – 30 year	3,966	4,155	3,610	5,373	7,251	9,299	8,589	7,411	11,252	13,224
Adjustable Rate										
Treasury Index	0	27	87	355	1,080	1,515	1,755	1,211	1,027	849
FHLBB Index	0	0	0	0	0	0	0	0	0	19
Seconds/HILs	0	8	27	38	47	67	135	171	196	379
FHA/VA	1,090	1,047	1,009	942	881	825	736	657	590	530
Total Single Family	5,056	5,237	4,733	6,871	9,405	12,558	12,004	11,342	15,239	18,350
Multifamily (Conventional):										
Fixed Rate – 15 year	0	0	0	18	339	1,246	959	896	1,096	822
Fixed Rate – 30 year	0	0	0	744	655	218	452	533	309	367
Fixed Rate – 10 year	0	0	0	0	0	0	164	101	781	2,312
Total Multifamily	0	0	0	762	994	1,464	1,575	1,530	2,186	3,501
Total Unpaid Principal Balance	5,056	5,237	4,733	7,633	10,399	14,022	13,579	12,872	17,425	21,851
Less: Unamortized Purchase Discount	51	59	54	148	381	475	486	518	507	404
Portfolio Valuation Allowance	9	9	30	39	50	61	81	96	103	119
Total Mortgages (Net)	4,996	5,169	4,649	7,446	9,968	13,486	13,012	12,258	16,815	21,328
Cash & Investments:										
Cash	0	0	0	24	79	33	72	63	25	72
Temporary Investments:										
Federal Funds	20	605	719	674	481	271	2,934	3,177	4,309	3,527
U.S. Treasuries	0	14	5	12	29	15	93	25	0	0
Municipal Securities	0	0	0	0	0	196	0	339	265	899
Equity Securities	0	0	0	0	0	108	291	686	721	844
Money Market Instruments	0	5	0	0	97	63	212	372	194	25
Other	0	5	32	2	24	1	10	8	11	29
Total Cash & Investments	20	629	756	712	710	687	3,612	4,670	5,525	5,396
Mortgage Securities Purchased under Agreement to Resell	0	0	0	0	1,513	509	4,495	5,859	9,107	5,765
Unamortized Mortgage Sales Discount	229	244	193	200	253	565	1,372	1,387	1,172	928
Accrued Interest Receivable	48	50	50	82	108	155	144	165	188	225
Accounts Receivable	174	214	291	375	460	767	443	1,018	1,061	1,385
Other Assets:										
Building and Equipment	3	2	1	2	3	29	21	32	81	62
Other Assets	*	*	*	*	*	*	*	110	179	102
Real Estate Owned (Net)	8	18	59	99	109	101	130	175	224	271
Total Assets	5,478	6,326	5,999	8,916	13,124	16,299	23,229	25,674	34,352	35,462

Table 2 (cont.)
Freddie Mac Balance Sheets

($ millions)

As of December 31:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Liabilities:										
P & I Due to PC Investors	204	204	546	953	1,188	2,247	5,958	4,192	5,011	6,670
Debt Securities:										
Notes, Bonds & Debentures:										
Due within 1 year	519	1,533	1,275	2,146	4,467	3,760	6,556	11,777	18,482	16,385
Due after 1 year	3,652	3,537	2,928	2,712	2,355	2,646	1,853	1,509	1,620	2,426
Reverse Repos	515	410	320	255	150	200	0	523	0	0
Subordinated Securities:										
Due within 1 year	0	0	0	0	0	0	0	150	100	0
Due after 1 year	200	200	465	491	813	993	1,997	1,936	1,936	2,046
Total Debt Securities	4,886	5,680	4,988	5,604	7,785	7,599	10,406	15,895	22,138	20,857
Multiclass Securities:										
Due within 1 year	0	0	0	36	190	375	659	351	265	289
Due after 1 year	0	0	0	1,633	3,024	4,773	4,310	3,301	4,479	5,003
Total Multiclass Securities	0	0	0	1,669	3,214	5,148	4,969	3,652	4,744	5,292
Total Debt	4,886	5,680	4,988	7,273	10,999	12,747	15,375	19,547	26,882	26,149
Accrued Interest Payable	100	108	91	111	150	194	109	127	134	164
Res. for Uninsured Prin. Losses	65	79	73	96	124	150	197	238	289	347
Other Liabilities	2	5	5	62	57	182	637	388	452	217
Total Liabilities	5,257	6,076	5,703	8,495	12,518	15,520	22,276	24,492	32,768	33,547
Stockholders' Equity:										
Non-Voting Common Stock	100	100	100	100	100	100	100	100	100	100
Voting Common Stock	0	0	0	0	0	0	0	0	0	150
Preferred Stock	0	0	0	0	150	150	150	150	150	0
Capital in Excess of Par	100	100	100	100	0	0	0	0	104	105
Retained Earnings	21	50	96	221	356	529	703	932	1,230	1,560
Total Stockholders' Equity	221	250	296	421	606	779	953	1,182	1,584	1,915
Total Liabilities and Stockholders' Equity	5,478	6,326	5,999	8,916	13,124	16,299	23,229	25,674	34,352	35,462
PCs Issued (Settlements)										
Lender Originated (Guarantor)	0	2,258	21,940	15,538	15,335	25,598	58,399	57,083	28,728	60,914
Own Originated (Cash)	2,526	1,271	2,229	4,153	3,349	13,230	41,799	17,934	11,049	12,533
Total PCs Issued	2,526	3,529	24,169	19,691	18,684	38,828	100,198	75,017	39,777	73,447
PCs Outstanding (Contingency)										
Lender Originated (Guarantor)	0	2,292	23,644	36,838	48,628	68,512	106,811	142,555	155,135	195,303
Own Originated (Cash)	16,962	17,605	19,308	21,153	22,292	31,995	62,375	70,080	71,271	77,567
Total PCs Outstanding	16,962	19,897	42,952	57,990	70,920	100,507	169,186	212,635	226,406	272,870

Note 1-Mortgage Assets include the Retained Portfolio of Mortgages ($16,220 in 1989), as well as mortgages pledged for or financed by Multiclass Debt Securities ($5,632 in 1989).
*Other Assets are included in Accts. Receivable for years 1980 thru 1986. Included in this amount are prepaid items and unallocated remittances.
Source: Federal Home Loan Mortgage Corporation.

When Freddie Mac was chartered, the twelve FHLBanks provided it with $100 million in start-up capital, for which they received 100,000 shares of nonvoting common stock. The nonvoting common stock was redeemable at par by statue. Although the FHLBanks held all of Freddie Mac's outstanding common stock, the FHLBanks could not directly influence corporate policy since their stock was nonvoting.

In 1984 Freddie Mac's board of directors acted to allow thrift institutions to recognize on their balance sheets a substantial portion of the value of the Freddie Mac stock which they indirectly owned through the FHLBanks. The Board did so by authorizing a dividend in the form of preferred stock to the member institutions of the Federal Home Loan Bank System. Restrictions were placed on the preferred stock so that it could only be traded among member institutions subject to a 1 percent ownership limitation. Because of the restrictions on transferability, the stock did not fully reflect a competitive market value in subsequent trading.

In July 1988, Freddie Mac's Board of Directors decided to broadened its ownership base by removing the trading restrictions on its preferred stock. In conjunction with the Board's decision, Freddie Mac offered to exchange each share of original preferred stock, along with a $7 per share capital contribution, for four shares of new senior participating preferred stock which would begin public trading on January 3, 1989.

By year-end 1988, stockholders had tendered virtually all of their restricted stock for new, freely transferable senior preferred stock. Thus, both Freddie Mac and the thrifts benefited from the removal of trading restrictions. Freddie Mac added about $104 million to its capital base, and thrifts were able to realize a capital gain on their undervalued stock. The new senior participating preferred stock began public trading January 3, 1989.

FIRREA changed Freddie Mac's ownership. It converted Freddie Mac's senior participating preferred stock into voting, freely transferable common stock as of August 9, 1989. The common stock began trading on the New York and Pacific Stock Exchanges on the following day.

Board of directors. Freddie Mac's corporate policy is determined by its Board of Directors. Prior to the enactment of FIRREA, the Board was composed of the three members of the FHLBB, who were appointed by the President. The Chairman of the FHLBB also served as Chairman of the Board of Directors of Freddie Mac. The three FHLBB members received no compensation for serving on Freddie Mac's Board.

FIRREA abolished the FHLBB and provided for an interim board of directors to govern Freddie Mac until the first annual meeting of its new common stockholders. The interim board consisted of the President of Freddie Mac, and the persons (or their designees) serving as Chairman of the FHLBB and the Secretary of Housing and Urban Development (HUD) on the day prior to the passage of FIRREA.

Having abolished the FHLBB, FIRREA established a framework for a new board of directors for Freddie Mac consisting of 18 members: 13 persons elected by voting common stockholders and 5 persons appointed by the President of the United States. Freddie Mac held its first stockholders' meeting on February 6, 1990 to elect its new Board of Directors.

One of the first actions taken by Freddie Mac's new Board was a decision to retire at par the nonvoting common stock held by the FHLBanks. This decision further severed Freddie Mac's ties with the Federal Home Loan Bank System. Another action taken by the Board at its first meeting was to reelect the Chief Executive Officer (CEO) of Freddie Mac, Leland Brendsel, as Chairman. Mr. Brendsel had previously been elected Chairman by the Interim Board on November 30, 1989.

Management. Freddie Mac underwent a major corporate reorganization during 1989. In January, Freddie Mac's operations were organized into seven divisions: (1) Capital Markets, (2) Marketing and Sales, (3) Risk Management, (4) Corporate Relations, (5) Operations, (6) Information Systems and Services, and (7) Control, Financial Reporting and Tax. In November, the position of Chief Operating Officer was created. Currently, the seven division heads report directly to the Chief Operating Officer (COO). The COO, in turn, reports to the CEO.

Location. Freddie Mac's corporate headquarters is currently in Reston, Virginia, but will be relocated to a new building complex in Tysons Corner, Virginia scheduled for completion in the fall of 1990. Freddie Mac has four regional offices from which it conducts most of its mortgage purchase activity. The regional offices are located in Arlington, Virginia (Northeast region); Chicago, Illinois (North Central region); Atlanta, Georgia (consolidation of Southeast and Southwest regions); and Sherman Oaks, California (Western region). Freddie Mac currently employs about 2,000 people.

Relationship to Federal Government

Freddie Mac's status as a Government-sponsored enterprise allows it to borrow at "agency" rates; i.e, rates that are close to U.S. Treasury rates. This so-called "agency" status is based upon an array of special benefits provided under Federal law that pertain to Freddie Mac, its debt securities, and its mortgage-backed securities (MBS).

Freddie Mac is perceived by market participants as being closely tied to the Federal Government. This perception is based upon the following set of characteristics that relate to Freddie Mac's origin, and its ties to and regulation by the Federal Government.

(1) Freddie Mac is a federally chartered corporation which has been charged by Congress with a public mission to provide assistance for residential mortgage financing on a national scale.

(2) Freddie Mac is exempt from State and local taxation, except real estate tax.

(3) Prior to FIRREA, Freddie Mac was controlled by the Presidentially appointed FHLBB.

More recently, as a result of FIRREA, additional ties to the Federal Government were established:

(1) The Secretary of the Treasury is authorized, at his discretion, to purchase up to $2.25 billion of Freddie Mac debt.

(2) Freddie Mac is subject to regulatory oversight by HUD.

(3) All issues of Freddie Mac secured obligations, including MBS, of types not issued prior to the date of enactment of FIRREA (8/9/89), are subject to Treasury approval.

(4) The President appoints five of the eighteen members of Freddie Mac's Board of Directors.

Federal law imparts a number of special characteristics to Freddie Mac obligations (both debt and MBS) that help to increase their marketability and contribute to their "agency" classification in the capital markets. Freddie Mac obligations generally are:

(1) lawful investments for all entities created pursuant to State or Federal law;

(2) eligible collateral for fiduciary, trust and public funds under to the control of the United States;

(3) exempt from the Federal securities laws to the same extent as Treasury securities;

(4) eligible for purchase by Federal Reserve Banks; and

(5) issued and traded in the secondary market through the book-entry system maintained by the Federal Reserve System.

Regulation and oversight

Prior to the passage of FIRREA, Freddie Mac was controlled by the FHLBB. Although FIRREA abolished the FHLBB and created a new Board of Directors for Freddie Mac that is elected by the common stockholders, it also gave the Secretary of HUD general regulatory power to oversee Freddie Mac's activities. FIRREA specifically gives HUD the power to "make such rules and regulations as shall be necessary and proper to ensure that [Freddie Mac's] purposes are accomplished." [Section 731 of FIRREA] As a result of this new oversight role over Freddie Mac, the Secretary of HUD has the authority to:

(1) Examine and audit the books and financial transactions of Freddie Mac;

(2) Limit dividends paid on Freddie Mac's common stock to a fair rate of return after consideration of the current earnings and capital condition of Freddie Mac;

(3) Increase Freddie Mac's ratio of unsecured debt to total regulatory capital, which is set by statute at 15-to-1;

(4) Approve new issuances of stock and convertible debt;

(5) Approve new pass-through securities programs; and

(6) Require that a reasonable portion of Freddie Mac's mortgage purchases be related to the national goal of providing adequate housing for low- and moderate-income families, but with reasonable economic return to Freddie Mac.

These powers gave HUD regulatory authority over Freddie Mac similar to HUD's then existing authority over Fannie Mae.

In response to its added responsibility of oversight over Freddie Mac, the Secretary of HUD created a Regulatory Review Board to help coordinate HUD oversight and regulatory authority over Freddie Mac and Fannie Mae. The Review Board will be responsible for collecting the necessary information on appropriate regulatory actions, and will make recommendations on actions and decisions to the Secretary.

FIRREA generally authorizes the Secretary of the Treasury to approve the issuance of any notes, debentures, or substantially identical types of unsecured obligations of Freddie Mac evidencing money borrowed, whether general or subordinated. [Section 731 of FIRREA] Treasury must approve the issuance of mortgage-related securities. Pursuant to FIRREA, certain existing programs for the issuance of both unsecured debt and mortgage-related securities are deemed to be already approved by the Secretary. Treasury also approves maturities and interest rates for both debt and mortgage-related securities.

In addition to the oversight by HUD and Treasury approval over issuance of securities, the Government Accounting Office (GAO) is authorized to conduct audits of the financial transactions of Freddie Mac. A report on each audit is submitted to Congress.

Private rating agency ratings. Moody's and S&P have both rated Freddie Mac securities triple A based on the strength of the implied government guarantee backing its financial obligations. S&P testified before the Senate Banking Committee in October 1989 that, excluding the impact of the implied Federal guarantee on its rating criteria, Freddie Mac's senior debt would be rated at least investment grade. S&P justified this rating by citing Freddie Mac's strategy of minimizing interest rate risk by financing over 95 percent of its mortgage purchases with mortgage-backed pass-through securities, and its good underwriting and quality control which have produced delinquency and foreclosure rates below industry averages.

FINANCIAL SAFETY AND SOUNDNESS OF FREDDIE MAC

In order to assess the financial safety and soundness of Freddie Mac, the degree of risk involved in the corporation's operations due to such factors as business risk, credit risk, interest rate risk, and management and operations risk, and also Freddie Mac's level of capital in relation to its activities, were examined. In addition, the quality and timeliness of information currently available to the Federal Government and the public concerning Freddie Mac's operations and the financial risks associated with such operations were assessed. The results of the analysis follow.

Business Risk

Overview

Business risk is the risk that a firm takes when making or providing a product or service. This type of risk is related to the firm's market environment, which, for Freddie Mac, is limited by its congressional charter to providing a secondary market for conventional mortgages.

The environment in which Freddie Mac operates is impacted not only by developments in the secondary markets for housing finance, but also by the same business cycle factors that affect the residential construction and home sales markets. Over the business cycle, income, housing prices, construction costs, interest rates, and availability of funds are the main determinants of mortgage demand and supply. The net effects of these cyclical influences are reflected in changes in such variables as housing starts and home sales. Over the longer term, changes in the financial system, population growth, household formation, and other demographic factors play a greater role.

Charter limitations on business

Freddie Mac's charter sets certain parameters for mortgages Freddie Mac is authorized to purchase (conforming loans). The parameters relate to the maximum loan amounts, requirements of insurance or other recourse for high loan-to-value (LTV) loans, and standards of marketability. Its charter also requires Freddie Mac to maintain a presence in the market at all times.

Thus, unlike a diversified financial corporation, Freddie Mac cannot redeploy its assets from the residential market to the commercial market, or withdraw from mortgage financing when economic conditions point to a higher return in other lines of business.

As described above, Freddie Mac's purchases are limited by its charter to conforming loans. While the size of this market is not directly measurable, it has been estimated that conforming loans represent about 75 percent of single-family originations.[2]

Home starts and home sales

Historically, activity in residential housing construction has varied substantially over business cycles. For example, in 1972 when the economy was expanding strongly, total private housing starts had hit 2.357 million units but, by 1975, when the economy was in the trough of a recession, they had fallen by over 50 percent to a 1.160 million rate.

Subsequently, total starts rose strongly, but in the next recession in 1982, they plunged by about 50 percent to only a 1.062 million rate. In the latest expansion, housing starts had recovered to a peak of 1.805 million units in 1986, but have since receded along with the slowing in general economic activity to only 1.376 million units in 1989.

The sales of new and existing single-family homes have also varied greatly over the business cycle. Total home sales plunged almost 50 percent from a peak of 4.803 million units in 1978 to only 2.402 million in 1982. They bounced back to 4.315 million by 1986 but, as with starts, they have remained essentially flat or fallen slightly the last two years. (See Table 3.)

The primary residential mortgage market

At the end of 1989, residential mortgage debt outstanding totaled over $2.4 trillion, and represented about two-thirds of total mortgage debt outstanding. Over 85 percent of residential outstandings were composed of one- to four-family mortgages, and the remainder were multifamily mortgages.

Residential mortgages outstanding grew at an annual rate of 12.0 percent in the 1970s and by 10.2 percent over the 1980s. However, as with starts and sales, there was great year-to-year variation. Residential mortgage debt outstanding increased by $117.8 billion in 1979 but, by 1982, net new activity had fallen by over 70 percent to only $33.0 billion. It subsequently swelled to $102.3 billion in 1983 and activity steadily improved through 1989. (See Table 4.)

Table 3

Housing Starts and Home Sales
(millions of units)

	Starts				Single-family home Sales			
	Total Priv.	growth rate	1-unit	growth rate	New	growth rate	Existing	growth rate
1978	2.020	1.7	1.433	-1.2	.817	-0.2	3.986	9.2
1979	1.745	-13.6	1.191	-16.7	.709	-13.2	3.827	-4.0
1980	1.292	-26.0	.852	-28.6	.545	-23.1	2.973	-22.3
1981	1.084	-16.1	.705	-17.2	.436	-20.0	2.419	-18.6
1982	1.062	-2.0	.663	-6.7	.412	-5.5	1.990	-17.7
1983	1.703	60.3	1.068	61.1	.623	51.2	2.719	36.6
1984	1.750	2.7	1.084	1.6	.639	2.6	2.868	5.5
1985	1.742	-0.4	1.072	-1.1	.688	7.7	3.214	12.1
1986	1.805	3.6	1.179	10.0	.750	9.0	3.565	10.9
1987	1.621	-10.2	1.146	-2.8	.671	-10.5	3.526	-1.1
1988	1.488	-8.2	1.081	-5.7	.676	0.7	3.594	1.9
1989	1.376	-7.5	1.003	-7.2	.649	-4.0	3.440	-4.3

Source: Census Bureau and National Association of Realtors.

Freddie Mac's business has not been subject to the same variability as the construction (starts and sales) and primary mortgage markets. Changes in starts and sales affect mortgage originations. However, mortgage originations are only loosely related to the changes in mortgages outstanding because only a portion of the buyers are in the market for the first time. While buyers trading up obtain a new mortgage, they usually pay down a smaller existing loan at the same time.

The growth of the secondary market and industry competition

The residential mortgage market has undergone radical changes over the last two decades with the deregulation of depository institutions and the securitization of mortgages. The movement initiated in the 1970s to permit banks and thrifts more flexibility to attract funds by removing restrictions on deposit types and yields was accelerated by the Depository Institutions Deregulation and Monetary Control Act of 1980, which led to the eventual removal of all interest rate ceilings.

The other major development was the growth of the securitization market for mortgage loans. Freddie Mac started offering PCs in 1971, but their growth was sluggish until the early 1980s, and Fannie Mae didn't start issuing MBS until 1981. By the end of 1979, Freddie Mac's portfolio and PCs outstanding represented only 2.1 percent of the residential mortgage market, while Fannie Mae had portfolio mortgage holdings of $51.1 billion or 5.5 percent. Meanwhile, Ginnie Mae-guaranteed MBS had grown to $75.8 billion, or 8.1 percent. (See Table 4.)

Total residential mortgage debt outstanding grew at a 10.0 percent annual rate over the last ten years, almost tripling from $934 billion at the end of 1979 to $2,421 billion in 1989. At the same time, agency and sponsored agency holdings (Freddie Mac and Fannie Mae's portfolio plus MBS outstanding, plus Ginnie Maes) ballooned at around a 21.1 percent annual pace, increasing by almost 7 times, from $146.3 billion to $991.8 billion.

As a result, the share of residential mortgage debt held or guaranteed by these three agencies has risen every year, from 15.7 percent at the end of 1979 to 41 percent at the end of 1989. In five of the last ten years, Freddie Mac, Fannie Mae, and Ginnie Mae have accounted for the securitization of more than half of the net increase in residential mortgages.

The phenomenal growth of the mortgage securitization industry in the 1980s has insulated both Freddie Mac and Fannie Mae from the cyclical vagaries of the residential mortgage market, protecting them from the slowdown in housing and mortgage finance in the early 1980s. More recently, with the new risk-based capital standards for depository institutions favoring the holding of mortgages securitized by Freddie Mac and Fannie Mae, an additional boost to the already strong growth in securitization is occurring.

Competition between Freddie Mac and Fannie Mae has grown more intense in recent years. Nonprice competition has increased with the development of new types of mortgage purchase programs and new types of MBS, and with advancements in customer service through the use of computer-related information processing. Price competition has also heated up. Freddie Mac has reported that price competition with Fannie Mae has driven down spreads on new business in each of the past two years.[3] Competition between Freddie Mac and Fannie Mae also drives down guarantee fees. This serves to make the secondary mortgage market more efficient, ultimately benefiting consumers with lower mortgage rates.

Geographical concentration

Geographical concentration can become a major risk factor because a severe economic dislocation in one region can have a serious financial impact, no matter how reliable the underwriting and quality control standards. Therefore, an important method of controlling business risk is through geographical diversification. Freddie Mac's purchased mortgages are regionally diversified, but the distribution is weighted heavily

Table 4

Total Residential Mortgage Debt, Originations, and Agency Secondary Market Activity

($ billions)

	Total Residential		FNMA+FHLMC+GNMA			GNMA			FHLMC			FNMA		
Year	Outstanding Debt	Originations	Outstanding	% of Res. debt	Purchases	Outstanding	% of Res. debt	Purchases	Outstanding	% of Res. debt	Purchases	Outstanding	% of Res. debt	Purchase
1970	324.4	44.4	16.4	5.1%	5.9	0.3	0.1%	0.5	0.0	0.0%	0.3	16.1	5.0%	5.1
1971	362.9	70.2	22.7	6.3%	7.1	3.1	0.9%	2.7	1.1	0.3%	0.8	18.5	5.1%	3.6
1972	414.2	91.3	28.0	6.8%	7.5	5.5	1.3%	2.5	2.2	0.5%	1.3	20.3	4.9%	3.7
1973	462.2	93.1	35.8	7.7%	10.1	7.9	1.7%	2.7	3.4	0.7%	1.3	24.5	5.3%	6.1
1974	498.3	79.8	46.9	9.4%	13.5	11.8	2.4%	4.3	5.4	1.1%	2.2	29.7	6.0%	7.0
1975	541.0	88.6	56.8	10.5%	13.2	18.3	3.4%	7.2	6.6	1.2%	1.7	31.9	5.9%	4.3
1976	605.2	125.1	70.5	11.6%	17.8	30.6	5.1%	13.1	7.0	1.2%	1.1	32.9	5.4%	3.6
1977	703.9	177.8	89.4	12.7%	25.6	44.9	6.4%	16.7	10.1	1.4%	4.1	34.4	4.9%	4.8
1978	816.0	201.6	112.7	13.8%	33.4	54.3	6.7%	14.6	15.1	1.9%	6.5	43.3	5.3%	12.3
1979	933.8	202.4	146.3	15.7%	40.5	75.8	8.1%	24.0	19.4	2.1%	5.7	51.1	5.5%	10.8
1980	1011.6	146.3	173.2	17.1%	32.0	93.9	9.3%	20.2	22.0	2.2%	3.7	57.3	5.7%	8.1
1981	1067.2	110.3	193.0	18.1%	24.4	105.8	9.9%	13.9	25.1	2.4%	3.7	62.1	5.8%	6.8
1982	1100.2	108.5	252.9	23.0%	68.8	118.9	10.8%	16.0	47.7	4.3%	23.7	86.3	7.8%	29.1
1983	1202.5	223.3	328.6	27.3%	104.4	159.9	13.3%	50.5	65.3	5.4%	23.0	103.4	8.6%	30.9
1984	1374.9	231.3	384.2	27.9%	80.1	180.0	13.1%	27.9	80.4	5.8%	21.9	123.8	9.0%	30.3
1985	1517.4	280.6	479.2	31.6%	135.1	212.1	14.0%	45.9	113.9	7.5%	44.0	153.2	10.1%	45.2
1986	1769.1	502.3	638.9	36.1%	293.1	262.7	14.8%	98.2	182.8	10.3%	103.5	193.4	10.9%	91.4
1987	1997.5	495.4	773.9	38.7%	257.6	315.8	15.8%	97.0	225.6	11.3%	76.8	232.5	11.6%	83.8
1988	2198.8	421.7	857.5	39.0%	178.6	340.5	15.5%	56.5	243.8	11.1%	44.1	273.2	12.4%	78.0
1989	2420.7	388.9	991.8	41.0%	228.4	369.9	15.3%	57.5	294.7	12.2%	78.6	327.2	13.5%	92.3

Source: Government National Mortgage Association, Federal Home Loan Mortgage Corporation, Federal National Mortgage Association, and HUD.

in a handful of states, largely because of the regional differences in volume in the primary mortgage origination market. (See Credit Risk.)

Demographics

Two important demographic trends are expected over the next decade: slower growth in net household formation and a changing composition of households. Both are related to the aging of the population, or the passing of the "baby boom" generation into middle age.

The aging of the "baby boom" generation into its peak first-time buying years (ages 25-34) in the 1970s induced large and predictable trend increases in housing demand in the 1970s and relatively strong trend increases in demand in the 1980s.[4] However, as Table 5 shows, in the next decade the "baby bust" generation will result in declining growth rates of the 25 to 34 age group, the peak first-time buyer group. The results, shown in Table 6, show that net household formation is expected to slow from 1.38 million per year in the 1980s to 1.21 million per year in the 1990s.

At the same time, however, the growth of the 35 to 64 year olds will accelerate, resulting in a larger tradeup market. The older group will have a higher per capita income and increased equity, resulting in a rise in the desired quality of homes. In addition, it is forecast that the demand for replacement homes will increase as the stock of homes built prior to World War II (almost 25 percent of the total) continues to age. Thus, move-up demand is expected to combine with increased replacement demand to only partially offset the decline in the 25 to 34 year old first time buyers group caused by the aging of the "baby boom" generation.

An important implication of a slowdown in the growth of the residential mortgage market is that the pace of housing price inflation in the 1990s will probably be slower than in the 1980s. Home sales by the Resolution Trust Corporation (RTC) and by FHA/VA will further dampen housing price inflation. Slower housing price inflation will have an adverse impact on the credit quality of mortgages Freddie Mac purchases (for example, mortgages will season less quickly). This in turn will increase the amount of capital needed to support these purchases. (See Credit Risk and Capital Analysis Sections.)

Legislative changes

Congressional support for the housing market and for the role that Freddie Mac plays in providing mortgage credit has not

Table 5
Average Annual Changes in Adult Population

(millions)

Age Group	1971-75	1976-80	1981-85	1986-90	1991-95	1996-2000
15-24	0.140	-0.226	-0.463	-0.310	0.055	0.097
25-34	1.229	1.231	0.922	0.338	-0.593	-0.763
35-44	-0.064	0.608	1.194	1.212	0.888	0.315
45-54	0.088	-0.201	-0.031	0.578	1.162	1.185
55-64	0.273	0.343	0.115	-0.195	-0.008	0.567
65+	0.518	0.604	0.565	0.604	0.441	0.224
Total	2.184	2.359	2.303	2.226	1.946	1.625
25+	2.044	2.585	2.766	2.537	1.890	1.528

Source: Bureau of the Census.

Table 6
Net Household Formation by Age Group

(Annual average change, millions)

Age Group	1971-75	1976-80	1981-85	1986-90	1991-95	1996-2000
15-24	0.295	0.147	-0.224	-0.156	-0.074	0.019
25-34	0.651	0.711	0.348	0.230	-0.248	-0.356
35-44	0.010	0.424	0.682	0.766	0.577	0.265
45-54	0.140	-0.052	0.010	0.355	0.700	0.737
55-64	0.095	0.245	0.127	-0.134	-0.005	0.333
65+	0.352	0.457	0.314	0.439	0.299	0.163
Total	1.543	1.931	1.257	1.500	1.249	1.161

Source: Bureau of the Census.

waned in the Corporation's twenty year history. Congress recently reaffirmed its support for Freddie Mac in FIRREA by specifically authorizing it to provide ongoing assistance to the secondary mortgage market.

Freddie Mac would be affected by legislative changes, both Federal and State, that impacted the residential housing and finance markets. For example, the new federally imposed risk-based capital guidelines for banks and thrifts encourage those institutions to hold mortgages securitized by Freddie Mac and Fannie Mae. This has had the effect of increasing the demand for Freddie Mac securities.

Conclusions and recommendations

The explosion in the growth of the mortgage securitization industry has effectively insulated Freddie Mac from the cyclical fluctuations in the residential housing and mortgage markets in the last decade. With roughly only 41 percent of outstanding residential mortgage debt securitized or held in portfolio by Freddie Mac, Fannie Mae, and Ginnie Mae; and a little over half of new originations being financed in the secondary market, continued growth in mortgage securitization appears likely. However, as the mortgage securitization industry matures and its growth slows vis-a-vis the growth of the mortgage market, Freddie Mac's operations will become more susceptible to the cyclical vagaries of the residential mortgage market.

The expected net impact of a change in demographics, both slower household formation and changing composition of households, will be to slow down the growth of the residential mortgage market in the 1990s. The pace of housing price inflation is also expected to slow. Combined with the growing maturation of the mortgage securitization industry, Freddie Mac is expected to experience slower growth in the 1990s than it experienced in the 1980s, and the mortgages which it purchases will have increased risk characteristics for longer periods of time. Slower housing inflation means that homeowner equity (the primary factor determining the probability of default -- See Credit Risk Section) will build up more slowly in the mortgages that Freddie Mac purchases than it did in the 1980s.

Credit Risk

Overview

Credit risk is the risk of loss due to default. For Freddie Mac, the main exposure to credit risk is the potential loss resulting from a borrower defaulting on a mortgage that it has purchased. Borrower default, however, does not result in a total loss to Freddie Mac. Upon default, Freddie Mac undertakes foreclosure proceedings to obtain possession of the property, and then resells it to recoup as much of its original investment as possible. Freddie Mac's losses are mitigated somewhat by its required use of credit enhancements such as MI, recourse, and collateral on its higher credit risk mortgage purchases (loan-to-value (LTV) greater than 80 percent).

To help manage its credit risk exposure for the mortgages it purchases, Freddie Mac has established a comprehensive set of underwriting standards, and an equally detailed set of standards for institutions servicing its mortgages. Procedures have been established to monitor adherence to these standards.

Freddie Mac's credit risk exposure is measured by examining (1) its geographical diversification, (2) its foreclosure and delinquency experience, (3) its loan loss charge-off and reserve allocation experience, (4) the risk characteristics of its purchased mortgages, and (5) its credit stress test.

Credit risk exposure

As of the end of 1989, Freddie Mac's potential credit risk exposure from residential mortgages totaled nearly $295 billion.[5] This was composed of $272.9 billion in PCs in which Freddie Mac has a contingent liability resulting from its guarantee, and $21.9 billion in mortgages held in its own investment portfolio, of which $5.6 billion are pledged as collateral for Freddie Mac multiclass debt securities.

The risk factors of residential mortgages are, to a large extent, quantifiable. The probability of default on a mortgage is related to a number of factors, including characteristics of the borrower, the mortgage instrument, and the property, as well as the performance of the seller/servicer. At a macro level, changes in the economic environment can affect the overall risk of default.

Important risk characteristics related to the borrower include income, which determines the ability to pay, and the downpayment, which determines the initial amount of equity the borrower stands to lose upon default. The higher the LTV ratio, the smaller a homeowner's equity and the greater the probability of default on the mortgage. Historically, ARMs default more frequently than fixed-rate mortgages, and owner-occupied properties default less frequently than investor-owned property.

Freddie Mac is exposed to an additional source of credit risk from its seller/servicers. Failure to properly service a loan will increase the mortgage's probability of default. Also, the potential bankruptcy or insolvency of seller/servicers could affect recourse agreements with these institutions.

Credit enhancements. Freddie Mac's charter requires the seller to provide credit enhancements when it purchases a mortgage secured by a single-family property that has a LTV ratio exceeding 80 percent, if the seller has not retained at least 10 percent participation in the mortgage. The primary type of credit enhancement is MI. Credit enhancements other than MI typically take the form of recourse, collateral, and participation (the sharing of losses with the seller on a pro rata basis). Table 7 shows the percent of Freddie Mac's purchased mortgages covered by credit enhancements.

Table 7

Credit Enhancements
(year-end 1989)

	Percent of Total Portfolio (UPB)*
MI	18.5%
Recourse(ex MI)	6.4
Collateral(ex MI)	0.5
Participations	22.7
FHA/VA	1.6

Source: Data from Federal Home Loan Mortgage Corporation

* Includes both sold and retained portfolios; UPB: unpaid principal balance

Freddie Mac has MI on about 18.5 percent of its purchased mortgages. MI is used on single-family mortgages purchased with LTVs over 80 percent. Multifamily mortgages do not have MI. Loans with original LTV over 80 percent comprised slightly over 20 percent of Freddie Mac's total mortgage portfolio at the end of 1989.

With recourse, Freddie Mac requires that the seller/servicer repurchase a mortgage loan upon default, but only 6.4 percent of its dollar volume of purchased mortgages at year-end 1989 had recourse (not as extensive as Fannie Mae). Book-entry Freddie Mac PCs are accepted as collateral from the seller. Freddie Mac uses collateral as a credit enhancement even less than recourse (only about 0.5 percent of outstanding mortgages at the end of 1989).

Freddie Mac has participation interests in 22.7 percent of its outstanding mortgages. Its use as a credit enhancement is limited, however, since liability for default is shared on a pro rata basis, and the majority of participations are on well seasoned loans whose default probabilities are very low.

Management of credit risk

To reduce its overall credit risk exposure, Freddie Mac has established a set of standards for originating, underwriting, and servicing mortgages which it purchases. These criteria are detailed in Freddie Mac's two volume Sellers' & Servicers' Guide. If a property goes through foreclosure, Freddie Mac has established a set of procedures to cost effectively acquire, manage, and dispose of the property.

Charter limitations. Freddie Mac is restricted by its charter to purchasing, as far as practicable, investment quality mortgages. Investment quality mortgages are defined as those mortgages that generally meet the purchase standards imposed by private institutional investors. The charter sets parameters for the types of mortgages Freddie Mac can purchase, including the maximum original loan amount for different mortgages (single, multifamily, seconds), maximum LTV ratios, and also on the maximum age (time past since origination).

Underwriting standards. To meet its charter requirements, Freddie Mac has established a set of comprehensive underwriting standards for mortgages that it purchases. The guide defines the standards that must be used by the mortgage industry to originate and sell investment quality loans to Freddie Mac. The underwriting standards are designed to ensure that the borrower has the ability and willingness to pay, and that the mortgaged property is valuable enough to cover the amount of the loan in the event of a default.

To help the seller evaluate the borrower's ability to repay the loan, Freddie Mac has established upper limits on the borrower's monthly housing expense-to-income ratio of 25 to 28 percent, and on his monthly debt payment-to-income ratio (housing expense plus other monthly obligations such as credit card debt payments) of 33 to 36 percent. If either of these two ratios is exceeded, the seller is required to file a written explanation to Freddie Mac justifying its underwriting decision.

Freddie Mac holds the seller responsible for the accuracy of the property appraisal. The seller is expected to evaluate appraiser qualifications and provide appraisers with all information necessary to make the appraisal. While Freddie Mac does not have an approved appraiser program, it does reserve the right to refuse to accept appraisals prepared by specific appraisers. Freddie Mac requires the finished appraisal to be certified.

Loan purchase quality control review. Freddie Mac conducts individual loan level reviews based upon an extensive sampling of current loan purchases for each month. The sampling technique is based upon the risk characteristics of the loan (loan-to-value ratio, property type, age of the loan, etc.), the customer's past performance, and the geographic area. The sampling is also adverse selection based: previous poor performance on any of the criteria produces higher sampling.

Based upon the quality control review, Freddie Mac classifies the loans as (1) investment quality, (2) marginal, but still purchased by Freddie Mac, and (3) unacceptable, not purchased by Freddie Mac and returned to the seller. It takes about 60 days for a loan to go through the quality control review.

In addition to the quality control review, Freddie Mac reviews all loans that default within 12 months of purchase. If it is determined that a defaulted loan fails to meet Freddie Mac's underwriting standards it is put back to the seller.

Seller/servicer standards. In addition to the underwriting standards on the mortgage, the guide places requirements on institutions wishing to transact business with Freddie Mac. At the end of 1989, Freddie Mac had about 5,800 approved seller/servicers as customers. All sellers of loans must also be servicers, but a customer can be a servicer without being a seller. Freddie Mac uses these requirements to help manage their risk exposure from the possible failure of a seller/servicer.

Freddie Mac imposes specific net worth requirements on applicants for seller/servicer status. In 1989 the requirement was $250,000; however, by December 31, 1992 the requirement will be increased to $1,000,000. This will be phased in by increasing net worth requirements to $500,000 in 1990 and to $750,000 in 1991. Freddie Mac also requires seller/servicers to maintain a minimum residential servicing volume of $10,000,000.

In addition to the financial requirements, Freddie Mac requires seller/servicers to submit a substantial number of reports including monthly summary and status reports on delinquencies, foreclosures, and real estate owned (REO). The seller/servicer must remit in a timely fashion principal and interest payments due Freddie Mac and keep accurate accounting records that agree with or reconcile to reports provided to Freddie Mac. Also, the seller/servicer must agree to allow Freddie Mac to examine its books during normal business hours; and, upon request from Freddie Mac, the seller/servicer must supply evidence, that is satisfactory to Freddie Mac, of the seller/servicer's compliance with any provision of the seller/servicer contract.

Monitoring of seller/servicers. Freddie Mac monitors seller/servicer eligibility requirements at the regional level. Sellers/servicers are required, by the Guide, to recertify each year as to their continuing eligibility. Freddie Mac maintains this information on a database which produces monthly noncompliance reports used by management to help monitor each seller/servicer with respect to its financial health and operational efficiency.

Freddie Mac uses a grading system to rank its customers (at least annually for its largest customers) on the basis of criteria such as: (1) financial condition, (2) underwriting capabilities, (3) servicing capability, (4) management quality and business philosophy, and (5) quality of loans sold to Freddie Mac. Freddie Mac uses these ratings to decide whether or not to do a particular financing with a seller and to determine the kind of credit enhancements it will accept from the seller (recourse or collateral).

Standards for private mortgage insurers. MI typically covers the first 25 percent of the loss on the mortgage upon default. MI must be provided by mortgage insurers approved by Freddie Mac. Freddie Mac has written eligibility and reporting requirements for mortgage insurers that set forth minimum financial and operational requirements. Non-compliance with these requirements can result in either a suspension or disqualification as a Freddie Mac approved mortgage insurer. If suspended, Freddie Mac will not purchase loans insured by the suspended insurer. If disqualified, Freddie Mac will refuse to purchase loans insured by the disqualified insurer and require the seller/servicer to either get replacement insurance on loans currently owned by Freddie Mac or repurchase the loan(s).

Monitoring of private mortgage insurers. Freddie Mac actively monitors mortgage insurers to determine their ongoing compliance with its mortgage insurer eligibility requirements. Freddie Mac conducts annual, on-site operational reviews and quarterly financial analyses on all approved private mortgage insurers. If any operational deficiencies are discovered, Freddie Mac will work with the insurer to help correct the problems before they have an impact on the claims paying ability of the insurer.

Pricing

In order to effectively manage risk, Freddie Mac must be able to price for the risk exposure that it is willing to accept. For loans purchased through the cash program, Freddie Mac must also price the mortgage cash flows. To do this, Freddie Mac uses market prices of similar PCs.

For negotiated purchases, which involve unique waiver(s) of underwriting standards, market prices of similar products are rarely available. For these purchases, prices are determined by calculating Freddie Mac's expected risk exposure from the purchase, using the known risk characteristics of the pool of mortgages it is considering purchasing. Through the use of statistical models for default and prepayment, Freddie Mac calculates expected default and prepayment rates, translates them into expected loss rates, and calculates a guarantee fee that will enable it to cover all expected costs.

Measuring credit risk exposure

Geographical diversification. Geographical diversification is an important method for controlling credit risk. The financial impact from an economic dislocation in one region can be mitigated if the portfolio of mortgages is geographically diversified.[6] Table 8 shows the percent of outstanding dollar volume of loans held or guaranteed by Freddie Mac in the top five states.

Table 8

Geographical Distribution of Freddie Mac's Purchased Mortgages

	Freddie Mac		HUD
	1988	Mar. 15, 1990	Orig. 80-88
California	21.8%	22.8%	21.7%
New York	6.3	6.8	5.5
New Jersey	5.2	5.6	3.9
Florida	4.9	5.2	5.1
Texas	4.7	4.2	6.6
Total (5 states)	42.9	44.6	42.8
All other states	57.1	55.4	57.2

Source: Data from Federal Home Loan Mortgage Corporation and HUD-No. 88-111, "Survey of Mortgage Lending Activity: State Estimates 1978-1988."

The HUD data on originations shown in Table 8 are used as a proxy for the comparison of Freddie Mac's activity to national activity by all mortgage lenders. The concentration of Freddie Mac's mortgages outstanding for the top five states closely approximates data on HUD originations for all lenders.

With the exception of California, which accounts for almost 23 percent of its credit risk exposure, Freddie Mac's mortgage outstandings are geographically diversified among the remaining 49 states. The credit risk exposure from Freddie Mac's concentration of business in California is lower, however, than it would be if the concentration were in other states, since California has a well diversified economy which would tend to insulate it from regional economic disturbances.

Foreclosure and delinquency rates. One way to measure Freddie Mac's credit risk exposure is to look at its delinquency and foreclosure experience. Chart 1 shows the sum of serious delinquencies (defined as loans on which payment is 90 days or more past due) and in foreclosure rates (the number of loans in the foreclosure process) for Freddie Mac, Fannie Mae, and an industry series reported by the Mortgage Bankers Association. Although not all mortgages that are 90 days delinquent go into foreclosure (payments are often resumed to avoid foreclosure), these indicators of credit risk do measure the potential near-term risk exposure from nonperforming loans. Based on the data shown in Chart 1, Freddie Mac's credit risk experience for the period 1983 to 1989 has been consistently superior to that of Fannie Mae and to the industry average.

Real estate owned (REO). Once a mortgage has passed through the foreclosure process, Freddie Mac takes title to the property and it becomes real estate owned (REO). Table 9 shows Freddie Mac's REO acquisitions, dispositions, and inventory for the past 10 years. Dollar acquisitions peaked in 1988 and have outpaced dispositions in every year except 1985.

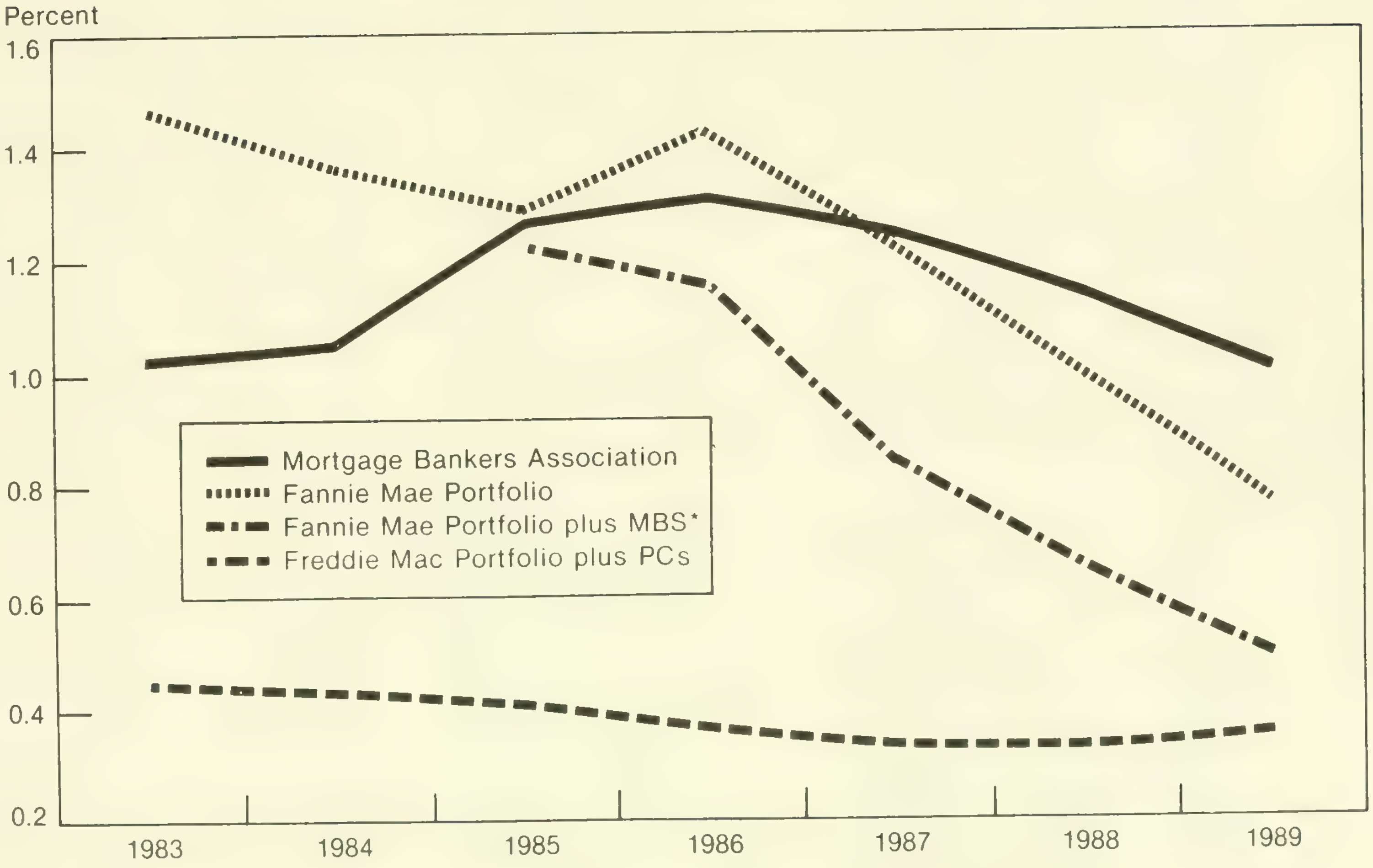
Once Freddie Mac acquires clear title to a property through the foreclosure process, it quickly takes action to dispose of its REO in a manner that minimizes its holding, administrative, and maintenance costs. Freddie Mac prepares a specific marketing plan for each property that takes into account its location, the type of property, value trends, and market competition. Repairs are made to a property on a net value added basis, i.e., only if the fix-up costs are less than the cost savings associated with selling the property more quickly than it otherwise would have without the repairs. Properties are listed and sold through local brokers.

Loss charge-offs and reserve for losses allocation. Freddie Mac sets aside reserves for losses on mortgages for both its retained and sold portfolio, as well as for its REO inventory. The retained and sold reserves reflect acquisition losses (estimated market value of the property at the time of acquisition net of the unpaid principal balance on the mortgage), while REO losses reflect losses on these properties at disposition (the market value of a property can change during the time it is in REO and Freddie Mac incurs costs in selling a property). The total allowance for losses is maintained at a level that, in management's judgment, is adequate to provide for all future losses. The allowance is increased by allocations at

Chart 1

Serious Delinquency Plus In Foreclosure Rates on Single-family Conventional Mortgages

(Fourth-quarter rates)



*Data on Fannie Mae's MBS not available prior to 1985

Source. Federal National Mortgage Association, Federal Home Loan Mortgage Corporation and Mortgage Bankers Association

Table 9
Freddie Mac Real Estate Owned

($ millions)

For the years ended December 31:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
REO - Gross, beginning of yea	0	8	18	63	103	109	101	153	190	235
Acquisitions	52	26	85	130	121	177	271	365	474	463
Dispositions	(44)	(16)	(40)	(90)	(115)	(185)	(219)	(328)	(429)	(419)
REO - Gross, end of year	8	18	63	103	109	101	153	190	235	279

Source: Federal Home Loan Mortgage Corporation.

the end of every quarter, and decreased by charge-offs, net of recoveries.

Freddie Mac's current policy for its retained and sold loss reserves is to allocate reserves on the basis of the dollar balances for each mortgage product type (single-family fixed, ARMs, and multifamily). Freddie Mac's policy is to consistently reserve in excess of actual losses.

Table 10 shows a breakdown of Freddie Mac's reserve for loan loss accounts. Total mortgage losses (or charge-offs) grew from $7 million, or .03 percent of its total mortgage outstandings, in 1980 to $207 million, or .07 percent, in 1989. Table 10 also shows the composition by product of Freddie Mac's losses. During 1989, the biggest jump in losses occurred in multifamily loans. This prompted Freddie Mac to tighten its multifamily underwriting standards in November of 1989. Single-family losses have actually declined over the last two years, reflecting favorably on the credit quality of the mortgages purchased in the high volume years of 1986 and 1987.

Portfolio statistics. The risk characteristics of Freddie Mac's total mortgage portfolio have improved on balance since the major revision of its underwriting standards in 1985. Table 11 shows the LTV composition (at origination) of mortgage purchases by product type for the years 1985 through 1989. The table also shows year-end LTV distributions for 1985 and 1989. Based on this data, the LTV distribution of Freddie Mac's mortgage portfolio has improved. The proportion of 91 percent and over LTV mortgages declined from 9 percent in 1985 to 6 percent in 1989, while the proportion of less risky 80 percent and under LTV mortgages increased from 72 percent in 1985 to 79 percent in 1989.

The biggest improvement came in the LTV distribution of ARMs. Eighty percent and under LTV ARMs now comprise 68 percent of total ARMs, compared to a much lower 46 percent in 1985. Although ARM purchases grew from $1.5 billion in 1985 to $23.2 billion in 1989, losses on ARMs have been fairly stable over this period. (See Table 10.)

LTV ratios at origination provide a good measure of credit risk for mortgage purchases only if mortgages are purchased close to the time of origination. This is because at origination the inverse of the LTV ratio closely approximates the amount of equity in the property. However, as mortgages season, housing inflation tends to increase the market value of the property, while at the same time amortization, at first slowly, lowers the unpaid principal balance on the mortgage. Both of these effects cause equity to build up in a property, which lowers the mortgage's probability of default. Table 12 shows Freddie Mac's estimated mark-to-market LTV (initial LTV adjusted for estimated house price appreciation and amortization) distribution for its major products at the end of 1989. (See Addendum for a

Table 10
Freddie Mac Reserve/Portfolio Losses

($ millions)

For the years ended December 31:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Portfolio Valuation Allowance (Retained Portfolio)										
Portfolio – Beginning Balance	(9)	(9)	(9)	(39)	(39)	(50)	(61)	(81)	(96)	(103)
Provision for Losses	(7)	0	(2)	(1)	(12)	(17)	(32)	(46)	(53)	(115)
Charge – Offs	7	0	2	1	1	6	12	31	46	99
Reallocation of Reserves	0	0	(30)	0	0	0	0	0	0	0
Portfolio – Ending Balance	(9)	(9)	(39)	(39)	(50)	(61)	(81)	(96)	(103)	(119)
Reserve For Uninsured Principal Losses (Sold Portfolio)										
Reserve – Beginning Balance	(50)	(65)	(79)	(64)	(96)	(124)	(150)	(197)	(238)	(289)
Provision for Losses	(15)	(15)	(25)	(45)	(42)	(62)	(88)	(129)	(151)	(145)
Charge – Offs	0	1	6	9	14	36	41	88	100	74
Reallocation of Reserves	0	0	34	4	0	0	0	0	0	13
Reserve – Ending Balance	(65)	(79)	(64)	(96)	(124)	(150)	(197)	(238)	(289)	(347)
Total Loan Reserves										
Beginning Balance	(59)	(74)	(88)	(103)	(135)	(174)	(211)	(278)	(334)	(392)
Provision for Losses	(22)	(15)	(27)	(46)	(54)	(79)	(120)	(175)	(204)	(260)
Charge – Offs	7	1	8	10	15	42	53	119	146	173
Reallocation of Reserves	0	0	4	4	0	0	0	0	0	13
Reserve – Ending Balance	(74)	(88)	(103)	(135)	(174)	(211)	(278)	(334)	(392)	(466)
REO Valuation Allowance										
Beginning Balance	*	*	*	*	*	*	*	(23)	(15)	(11)
Provision for Decreases in NRV	*	*	*	*	*	*	*	(17)	(15)	(18)
Disposition Losses (Gains), Net	*	*	*	*	*	*	*	25	19	34
REO Valuation Allowance, year–end	0	0	0	0	0	0	(23)	(15)	(11)	5
Reallocation from Restated UPL	0	0	(4)	(4)	0	0	0	0	0	(13)
Ending Balance	0	0	(4)	(4)	0	0	(23)	(15)	(11)	(8)
Total Reserve										
Beginning Balance	(59)	(74)	(88)	(103)	(135)	(174)	(211)	(301)	(349)	(403)
Provision for Losses	(22)	(15)	(27)	(46)	(54)	(79)	(120)	(192)	(219)	(278)
Charge – Offs	7	1	8	10	15	42	53	144	165	207
Reallocation of Reserves	0	0	0	0	0	0	0	0	0	0
Ending Balance	(74)	(88)	(107)	(139)	(174)	(211)	(301)	(349)	(403)	(474)
Losses By Product **										
Single–family	–	–	–	10	12	39	43	111	102	84
ARM's	–	–	–	0	2	2	7	19	18	22
Multifamily	–	–	–	0	1	1	3	14	40	98
HIL's & Other	–	–	–	0	0	0	0	0	5	3
Total Losses	–	–	–	10	15	42	53	144	165	207
Total Charge–offs as a % of:										
Ending Reserve Balance	9.5%	1.1%	7.5%	7.2%	8.6%	19.9%	17.6%	41.3%	40.9%	43.7%
Provisions	31.8%	6.7%	29.6%	21.7%	27.8%	53.2%	44.2%	75.0%	75.3%	74.5%
Retained & Sold Mortgage Portfolio	0.03%	0.00%	0.02%	0.02%	0.02%	0.04%	0.03%	0.06%	0.02%	0.07%

*For years 1980 through 1985, no REO Valuation Allowance was separately maintained; disposition loss was calculated beginning in 1987.

**Estimates for years 1983 through 1986 based on available REO data.

Source: Federal Home Loan Mortgage Corporation.

Table 11
Freddie Mac
Mortgage Portfolio Statistics

(purchased UPB*)

	Acquisitions					Year-end	
	1985	1986	1987	1988	1989	1985	1989
Mortgages ($ billions):							
Total	$43.4	$103.6	$76.3	$43.0	$73.6	$117.9	$305.7
SFFR	41.3	97.7	69.9	35.6	58.0	113.7	272.1
ARMs	0.6	2.3	4.3	6.3	13.9	1.5	23.2
Multifamily	1.5	3.6	2.1	1.1	1.7	2.7	10.4
Original Loan-To-Value (% UPB):							
Total loans:							
0% to 80%	77%	80%	80%	79%	80%	72%	79%
81% to 90%	15	14	15	15	16	19	15
91% and over	8	6	5	6	4	9	6
Single-family fixed rate:							
0% to 80%	76%	81%	82%	80%	79%	72%	80%
81% to 90%	15	14	14	14	15	19	15
91% and over	8	6	5	5	4	9	6
ARMs:							
0% to 80%	55%	63%	61%	66%	70%	46%	68%
81% to 90%	23	26	28	24	22	24	24
91% and over	22	10	11	10	7	30	9
Multifamily:							
0% to 80%	92%	85%	93%	92%	97%	95%	91%
81% to 90%	8	14	7	8	1	5	8
91% and over	0	1	1	0	0	0	1
Recourse (% UPB):							
SFFR	8%	5%	7%	7%	6%	9%	7%
ARMs	0	0	0	7	7	0	5
Multifamily	0	0	0	0	1	-	0

Note: Sums may not add to total due to rounding.

*UPB: unpaid principal balance.

Source: Federal Home Loan Mortgage Corporation.

Table 12
Estimated Mark-to-Market Loan-to-Value Distribution For Freddie Mac's Major Product Types *

(December 31, 1989)

Loan-to-value ranges	Single-family 30-Yr.	Single-family 15-Yr.	Single-family ARMs	Multi-family
Less than 50%	35.9%	50.2%	9.8%	28.1%
50.0 - 54.9	8.4	11.8	4.6	7.5
55.0 - 59.9	9.2	10.2	5.8	9.0
60.0 - 64.9	9.2	8.8	7.4	10.4
65.0 - 69.9	9.1	6.8	8.9	10.7
70.0 - 74.9	9.1	5.3	10.2	10.1
75.0 - 79.9	7.6	3.5	10.8	7.9
80.0 - 84.9	5.0	1.8	10.7	5.4
85.0 - 89.9	3.2	0.9	10.2	4.2
90.0 - 94.9	1.8	0.4	8.1	2.9
95.0 and over	1.4	0.2	13.7	3.8
Total	100%	100%	100%	100%

Totals may not add to 100% due to rounding.

*Initial LTV adjusted for estimated house price appreciation and amortization.

Source: Federal Home Loan Mortgage Corporation.

description of how mark-to-market LTV is estimated.) Freddie Mac's estimated average mark-to-market LTV for the end of 1989 was about 55 percent, which suggests that the credit quality of its purchased mortgages is very good.

Credit stress test. Freddie Mac has designed a credit stress test that attempts to approximate the credit quality of its purchased mortgages under a stressful economic environment. Freddie Mac employs behavioral models for default and prepayments to simulate the credit performance over time of its existing book of purchased mortgages. Loss severity rates are adjusted to assume recourse agreements are not honored. Also, MI is assumed to last only as long as the insurer's Moody's credit rating implies they will survive in a depression (5 years for an A rated firm, 7 years for a AA rated firm, and 10 years for a AAA rated firm).

Freddie Mac regularly tests the performance of its purchased mortgages using Moody's Great Depression economic stress scenario. Freddie Mac has shown improvement in the credit performance of its purchased mortgages over the last three years. At the end of 1989, Freddie Mac survived its stress test for 10.5 years, surpassing its 1988 performance of about 9 years, and more than doubling its survival time of approximately 5 years in 1987. (See Addendum for a complete description of Freddie Mac's stress test.)

Conclusion and recommendations

Credit risk has been effectively managed through a combination of (1) comprehensive underwriting and seller/servicer standards, (2) active and effective monitoring of adherence to its standards, and (3) accurate measurement and pricing of risks.

Freddie Mac utilizes credit enhancements (e.g., MI, recourse, collateral) on its high LTV loans to mitigate its credit risk exposure. The extent to which Freddie Mac can rely on its credit enhancements in a depressed economic environment, however, is unclear. Private mortgage insurers and institutions which Freddie Mac has recourse agreements with may themselves go out of business in a depression environment. Freddie Mac recognizes this possibility in its credit stress test by assuming recourse agreements are not honored and that its MI coverage from insurers rated below AAA disappears over the course of its test.

Freddie Mac's delinquency and foreclosure experience has consistently been superior to that of Fannie Mae and to the industry average. Its loss experience on single-family fixed-rate mortgages has declined for the past two years, reflecting favorably on the credit quality of its purchased mortgages.

Although Freddie Mac has increased its purchases of ARMs in recent years, its loss experience with ARMs suggests that it has effectively managed the higher risks historically associated with these instruments. Losses from multifamily mortgages, in contrast, increased dramatically in 1989. However, recent changes in underwriting standards for these instruments and the fact that multifamily mortgages represent a small portion of outstandings suggests that the increased losses do not pose a long-term problem.

Recent housing inflation greatly benefitted Freddie Mac by accelerating the buildup in homeowners' equity which rapidly decreased the risk characteristics on the large amount of mortgages purchased since 1985. This helped to improve Freddie Mac's performance in its credit stress test. Based on the results of Freddie Mac's stress test, the credit performance of its purchased mortgages has improved over the last three years.

Interest Rate Risk

Overview

Interest rate risk occurs when the value of a firm's assets and the value of its liabilities react differently to changes in interest rates. For Freddie Mac, a change in the level of interest rates will differentially impact the value of its retained mortgage portfolio and the value of its liabilities used to fund the mortgages. In addition, changes in interest rates alter mortgage prepayments which affect its stream of guarantee fee income. Freddie Mac's interest rate risk exposure is analyzed by examining the sensitivity of the value of its balance sheet to changes in interest rates. Duration and market value simulation analyses are utilized. A stress test with a prolonged high interest rate environment is also examined.

Securitization

Freddie Mac minimizes its exposure to interest rate risk by financing 95 percent of its mortgage purchases with PCs. PCs, which are pass-through mortgage-backed securities, transfer interest rate risk to the holders of the securities. PCs do not appear on the balance sheet, but Freddie Mac retains the contingent liability associated with default. At the end of 1989, Freddie Mac had $272.9 billion in PCs outstanding.

Freddie Mac securitizes a much smaller portion of its mortgage purchases with debt secured by mortgages in the form of Collateralized Mortgage Obligations (CMOs) and Mortgage Cash Flow Obligations (MCFs). CMOs and MCFs are multiclass MBS which are classified as debt obligations and appear on the balance sheet. At the end of 1989, Freddie Mac had $5.6 billion in multiclass MBS outstanding.

Retained mortgage portfolio

Freddie Mac currently funds only about 5 percent of the mortgages it purchases through its portfolio. Freddie Mac's portfolio is used for two purposes: (1) to fund mortgages held as inventory to facilitate the pooling of mortgages with homogeneous characteristics into PCs; and (2) to fund new mortgage purchase programs where volume has not yet reached a level that will support securitization.[7]

The size and composition of Freddie Mac's retained portfolio is presented in Table 13. At year-end 1989, Freddie Mac had $21.8 billion in mortgages in its portfolio. After subtracting the $5.6 billion in mortgages funded by multiclass debt securities, $16.2 billion of mortgages were funded by means other than securitization. At the end of 1989, Freddie Mac's mortgage portfolio (net of mortgages financed by multiclass securities) comprised about 46 percent of its balance sheet assets.

Retained mortgage portfolio funding

Match funding. Multifamily mortgages with 5-yr. prepayment lockouts and ARMs with no rate caps are funded with debt securities with similar cash flow characteristics. The interest rate risk for these mortgages is very small, since this type of funding effectively matches the duration (timing of the cash flows) of the mortgage with the duration of the debt instrument used to fund it. In 1989, this type of financing amounted to $2.5 billion.

General funding. The remaining $13.7 billion of mortgages that are not securitized or match funded are financed along with other balance sheet assets with general obligation debt, float, and capital. Table 14 shows the composition and size of Freddie Mac's outstanding debt. The maturity structure of Freddie Mac's debt is heavily weighted at the short end: short-term debt at the end of 1989 totaled $16.4 billion while long-term debt was $4.5 billion, for a ratio of short-term to total debt of 78 percent.

Float provides an additional source of funds. Freddie Mac generates a substantial dollar volume of float from the timing differences between when interest and principal payments are remitted to it, and when it passes on these payments to holders of its PCs. During 1989, Freddie Mac had an average float balance of $5.3 billion.

Freddie Mac uses a portion of its float balance to fund its interest earning assets. Interest earning assets are comprised of retained mortgages, cash and investments, and reverse repos on Freddie Mac mortgage-backed securities. For 1989, and based on monthly weighted average balances, Freddie Mac's interest-earning assets exceeded its interest-bearing liabilities by $2.9 billion. Freddie Mac finances this difference with float.[8]

Measures of interest rate risk

Market value accounting. Freddie Mac's objective in managing interest rate risk is to insulate the market value of the firm from changes in interest rates.

Market value accounting estimates the net value of the firm if it liquidated all its assets and liabilities at their market value. Comparisons of the market value of the firm over time can show its sensitivity to changes in interest rates. Also, by modeling the determinants of market value (this involves the use of Option Adjusted Spread models for valuing its mortgages) it is possible to analyze the sensitivity of the current book of business to changes in interest rates. Although generally

Table 13
Freddie Mac Retained Mortgage Portfolio
Year-end Levels

($ billions)

	1989	1988	1987	1986
Total Mortgages	21.8	17.4	12.9	13.6
Less: Mortgages financed by multiclass debt securities	5.6	5.3	3.9	5.2
Interest Rate Risk Mortgages	16.2	12.1	9.0	8.4
Less: Mortgages with matched financing*	2.5	1.4	1.5	1.7
Mortgages without prepayable financing	13.7	10.9	7.5	6.7

*Freddie Mac match funds Multfamily Plan B mortgages, which have a 5-yr. prepayment lockout, with callable general and subordinated debentures. ARMs with no rate caps are funded with short-term notes.

Source: Treasury calculations based on data supplied by Freddie Mac.

Table 14
Freddie Mac Year-end Outstanding Debt Excluding Multiclass Debt Securities

($ billions)

	1989	1988	1987	1986
Notes and Bonds				
Due within 1 year:	15.1	16.2	11.8	5.4
Discount notes	--	--	0.5	--
Reverse Repos	--	--	--	--
Short-term & medium-term notes & floating rate debentures	0.8	2.2	--	--
Current Portfolio long-term debt	0.4	*	*	1.1
Total due within 1 year	16.4	18.5	12.3	6.5
Due after 1 year:				
Notes to FHLBs	0.7	0.7	0.7	0.7
Mortgage-backed bonds	0.2	0.2	0.2	0.2
Debentures	1.5	0.7	0.6	0.6
Medium-term notes	*	--	--	--
Total due after 1 year	2.4	1.6	1.5	1.5
Total Notes and Bonds	18.8	20.1	13.8	8.0
Subordinated Debt				
Capital debentures	1.3	1.3	1.5	1.5
Zeros	0.8	0.7	0.6	0.5
Total Subordinated Debt	2.1	2.0	2.1	2.0
Total Debt	20.9	22.1	15.9	10.0
Ratio of short-term to total debt (%)	78	84	77	65

*Less than $50 million.

Source: Federal Home Loan Mortgage Corporation.

accepted accounting principles (GAAP) have not been developed for market value accounting, Freddie Mac currently publishes its market value balance sheet on a quarterly basis.[9]

There are three major components of Freddie Mac's market value balance sheet that are interest rate sensitive. The three components are: (1) mortgages, (2) long-term debt securities, and (3) servicing on its pass-through mortgages. Servicing is an asset that shows up on its market value balance sheet but not on its book value balance sheet. It measures the present value of the difference between what Freddie Mac receives in interest from its mortgages and what it pays out in interest on its PCs, net of costs associated with servicing. Thus it effectively measures the present value of guarantee fee income received by Freddie Mac from its outstanding PCs. Rising interest rates reduce prepayments and increase the present value of the stream of guarantee fee income, while falling rates increase prepayments and lower the present value of the fee income stream.

To test the sensitivity of its market value to interest rate changes, Freddie Mac was asked to calculate its year end 1989 market value with alternative interest rate assumptions. The results of this test are presented in balance sheet format in Table 15. Market values of the firm are calculated at 100 basis point increments for a range of plus and minus 300 basis points.

As of December 31, 1989, Freddie Mac had an estimated market value of $5.1 billion. This would be more than 2.6 times the equity book value of $1.9 billion. A 300 basis point increase in interest rates causes Freddie Mac's market value to decrease to $4.5 billion, for a decline of 12 percent. A 300 basis point fall in rates causes its market value to fall to $3.5 billion, for a 31 percent decline. For all cases, the market value of Freddie Mac is greater than its book value. The market value of servicing plays an important role in reducing the interest sensitivity of the net market value of Freddie Mac to changes in interest rates. For example, excluding the effect on market value of servicing and commitments, a 300 basis point increase in rates lowers Freddie Mac's market value by 80 percent, while a 300 basis point fall in rates actually increases Freddie Mac's market value by 8 percent. Thus, the market value of servicing and the market value of the retained mortgage portfolio are negatively correlated, with each serving as a partial interest rate hedge for the other. The following duration analysis illustrates this point.

Table 15
Freddie Mac Market Value Balance Sheet
Including the Impact of Interest Rate Shocks of +_ 300 Basis Pts.

As of December 31, 1989

($ millions)

	-300	-200	-100	0	100	200	300
Assets							
Single Family							
FR15YR	3,251	3,233	3,190	3,112	3,012	2,903	2,790
FR30YR	8,355	8,230	8,061	7,806	7,499	7,166	6,825
ARM1YR	602	595	585	574	562	550	538
ARM3YR	235	232	228	224	218	210	201
ARM5YR	68	68	67	65	63	61	59
Seconds	373	370	367	362	353	342	331
Govt. Insured/FHA	989	973	951	900	881	840	797
Multifamily							
15YR	926	908	886	861	833	803	769
30YR	338	346	343	332	318	304	290
Other	2,591	2,503	2,410	2,316	2,222	2,128	2,036
CMOs/MPO	3,161	3,110	3,039	2,936	2,817	2,689	2,559
Total Mortgages (UPB)	20,887	20,567	20,127	19,488	18,778	17,997	17,196
Less: Unamortized Purchase Disc.	0	0	0	0	0	0	0
Reserve Allowance	(119)	(119)	(119)	(119)	(119)	(119)	(119)
Total Mortgages (Net)	20,768	20,447	20,008	19,369	18,659	17,877	17,077
Other Assets							
Cash and Invest.	5,409	5,405	5,401	5,396	5,392	5,388	5,384
Reverse Repos	5,778	5,774	5,769	5,765	5,760	5,756	5,752
Unamortized Sales Disc.	0	0	0	0	0	0	0
Accurued Sales Rec.	229	228	226	225	223	222	221
Accounts Receivable	1,547	1,547	1,547	1,547	1,547	1,547	1,547
REOs	250	250	250	250	250	250	250
Servicing							
PCs	1,875	2,481	3,061	3,533	3,758	3,963	4,087
Commitments	64	75	86	91	94	95	95
Total Assets	35,920	36,207	36,348	36,176	35,684	35,098	34,412
Liabilities							
CMO/MCF/MPO Securities	2,641	2,590	2,512	2,417	2,294	2,181	2,068
Debt Securities:							
Notes,Bonds Due in 1YR	16,470	16,455	16,441	16,427	16,413	16,399	16,385
Due Beyond 1YR	2,636	2,580	2,517	2,434	2,344	2,256	2,168
Subordinated Debt	3,300	2,961	2,690	2,467	2,279	2,120	1,986
Total Debt	25,047	24,586	24,159	23,745	23,330	22,955	22,608
Accrued Int. Payable	6,643	6,638	6,633	6,628	6,623	6,618	6,613
Reserves For Losses	347	347	347	347	347	347	347
Other Liabilities	380	380	379	379	379	378	378
Total Liabilities	32,417	31,951	31,519	31,099	30,678	30,299	29,946
Market Value of Freddie Mac	3,502	4,256	4,829	5,077	5,005	4,799	4,467

Source: Federal Home Loan Mortgage Corporation.

Duration. Duration is a measure of the weighted average life of the cash flows of a security. Portfolio duration is a weighted average of the individual security durations. Duration can also be used as a measure of the sensitivity, or elasticity, of the value of a security to changes in interest rates.[10] Prices of securities with different durations will react differently to changes in interest rates. It is this use of duration that makes it a useful tool for assessing interest rate risk.

Table 16 shows the durations at the end of 1989 for the major components of Freddie Mac's balance sheet, and the associated market values of these components. Duration gaps are frequently used to measure a firm's interest rate sensitivity. A firm's duration gap measures the sensitivity of a target variable to interest rate changes. The target account may be capital, the capital/asset ratio, net income, the net income/asset ratio, or some other variable, depending on what the firm is trying to control.[11]

Capital is a common target account. For firms trying to minimize the sensitivity of the value of capital, the strategy Freddie Mac employs, a common way to express a duration gap for a given change in interest rates is the duration of assets minus the duration of liabilities, weighted by the liability/asset ratio.

Table 16 shows this duration gap measure for Freddie Mac, with total assets calculated with and without servicing. Excluding servicing, Freddie Mac had a duration gap of .96 years (or about 11 1/2 months) at the end of 1989. As was demonstrated above in Freddie Mac's mark-to-market balance sheets, changes in the market value of its guarantee fee income stream act as a hedge in offsetting changes in the market value (prices) of its retained portfolio of mortgages. Including servicing, the duration gap shrinks from .96 years to a small negative .18 years (or about 2 months).

Interest rate sensitivity curves. In addition to analyzing the sensitivity of the mark-to-market value of its current book of business to interest rate shocks, Freddie Mac has extended its analysis to the case of a one-for-one replacement of repaid mortgages. This assumption allows Freddie Mac to maintain the size of its current book of business as interest rates change.

The results of these analyses for interest rate shocks of plus and minus 500 basis points are plotted in Chart 2. The curves are called interest rate sensitivity curves, where the vertical axis measures the estimated market value of Freddie Mac and the horizontal axis measures changes in interest rates. The flatter the curves, the less sensitive Freddie Mac is to interest rate changes. Under both cases and under every rate shock, Freddie Mac maintains a positive market value.

Table 16

Freddie Mac Durations of Various Financial Components
(year-end 1989)

	Duration (Yrs.)	Market Value (Mil. of $)*
Mortgage Assets	3.49	17,000
Other Assets	0.08	13,200
Total Assets	2.00	30,200
Long-term Liabilities	5.54	5,300
Short-term Liabilities	0.08	23,400
Total Liabilities	1.09	28,700
Servicing	-9.80	3,600

Duration Gaps (years):	Gap **
Excluding servicing	.96
Including servicing	-.18

Source: Data from Federal Home Loan Mortgage Corporation

* Rounded values
** Duration of assets - (liabilities/assets) x duration of liabilities

Analyzing Freddie Mac's interest rate risk using interest rate sensitivity curves is superior to using duration gap analysis. Durations of its assets and liabilities change at different rates when interest rates change. Thus, a change in interest rates results in a mismatch in duration even though durations were matched before the interest rate shift. The curves show how well Freddie Mac is able to insulate itself from interest rate risk through its strategy of matching duration and convexity (the rate of change in duration as interest rates change).[12] Convexity matching attempts to closely match movements in the durations of assets and liabilities as interest rates change.

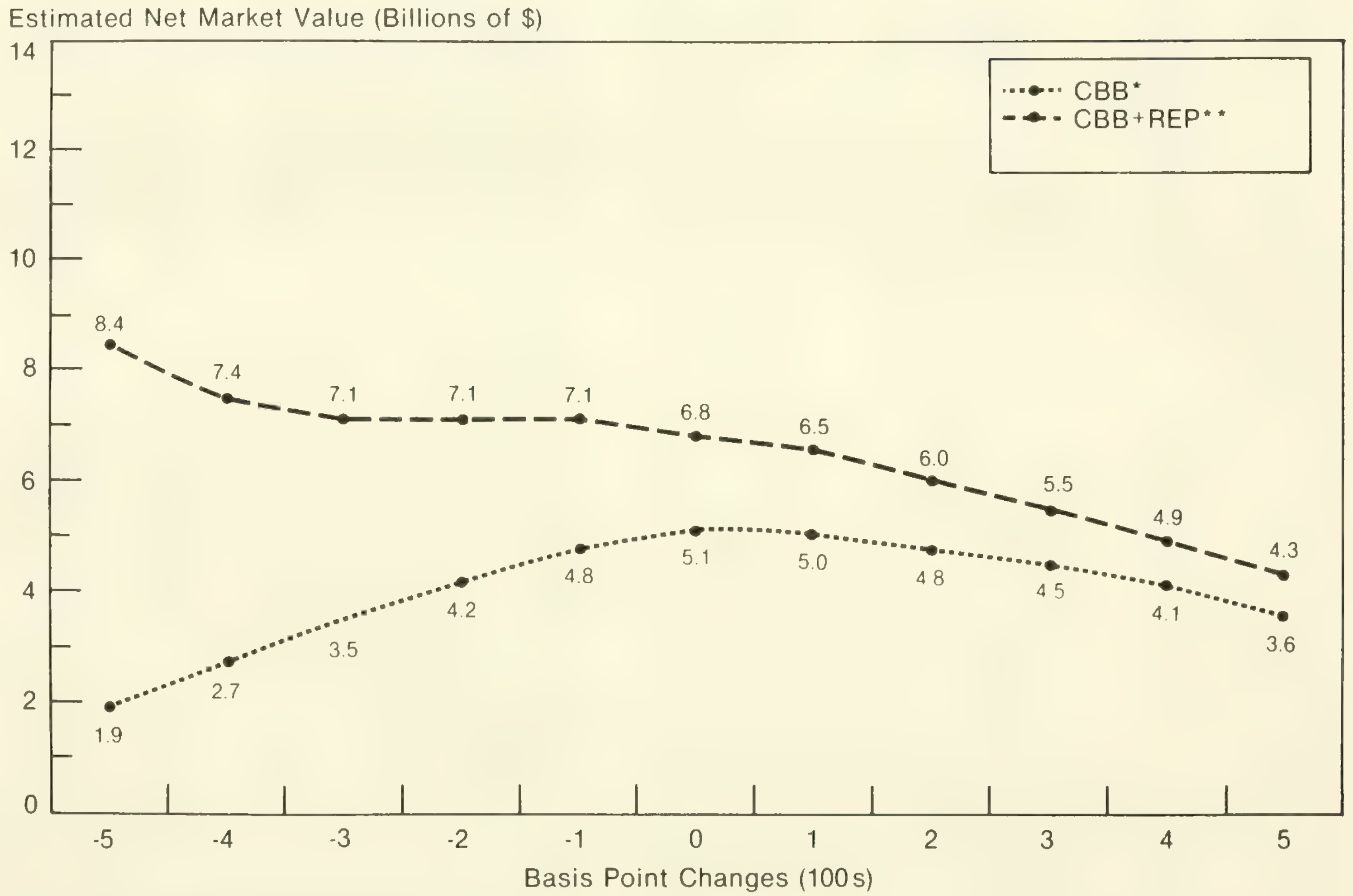
Credit crunch stress test. Freddie Mac runs a "credit crunch" stress test based on the high interest rate environment of the early 1980s. Freddie Mac's stress test is designed to simulate the impact on its capital from projections of expected default, prepayment, and losses for mortgages in its portfolio. (See Addendum for description of Freddie Mac's stress test.) The stress scenario increases mortgage rates up to 15 percent and keeps them there for 10 years.

A rising interest rate environment does not hurt Freddie Mac. High interest rates significantly reduce prepayments and only slightly increase defaults on the total portfolio. Most of the increased defaults occur with ARMs, but ARMs only represent a small portion of the total portfolio. Freddie Mac easily

Chart 2

Freddie Mac Interest Rate Sensitivity Curves

(as of 12/31/89)



*CBB-Current Book of Business
**REP-Replacement Business assumes
1 for 1 replacement plus constant net profit

Source: Federal Home Loan Mortgage Corporation.

survives this type of stress test, lasting until the last mortgage in its portfolio matures.

Net interest margin. Net interest margin is a crude measure of how successful Freddie Mac has been in managing its interest rate risk. Freddie Mac's annual net interest margin for the 1980s is shown in Chart 3. Its net interest margin increased from a low of 1.2 percent in 1981 to a peak of 4.2 percent in 1988, falling in 1989 to 3.4 percent. The upward shift in its net interest margin during the early 1980s resulted from a reduced reliance on portfolio funding for its mortgage purchases. As portfolio funding stabilized at about 5 percent of purchases, Freddie Mac's net interest margin stabilized around 3 percent. Chart 3 also shows that even during the early 1980s, when many institutions holding mortgages funded by debt suffered losses, Freddie Mac maintained a positive income stream from its earning assets.

Conclusion and recommendations

Our analysis of Freddie Mac's balance sheet and mortgage funding activities leads us to conclude that its overall exposure to interest rate risk is small. It minimizes its exposure by securitizing about 95 percent of the mortgages that it purchases. Securitization passes on interest rate risk to the investor.

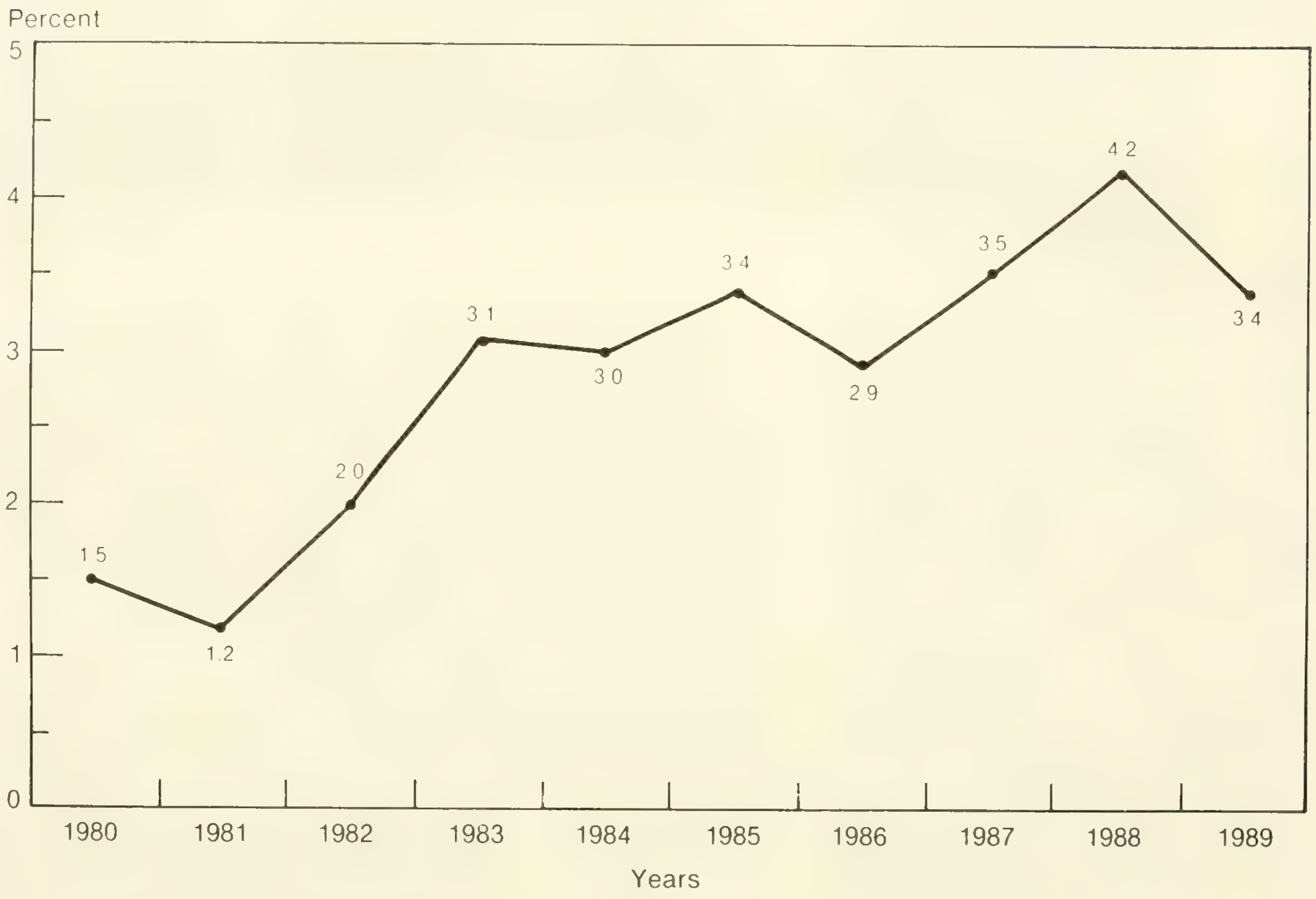
Freddie Mac is exposed to interest rate risk from the 5 percent of mortgage purchases that it funds through its portfolio. To manage its interest rate risk, Freddie Mac analyzes the sensitivity of the value of the firm to changes in interest rates. It does this by utilizing sophisticated modeling techniques that simulate the impact of interest rate shocks on its net market value. Freddie Mac's interest rate risk exposure is small when viewed in the context of its overall balance sheet (including the value of its guarantee fee income stream) sensitivity to changes in interest rates.

Although Freddie Mac's current interest rate risk exposure is small, it could increase its exposure at any time by increasing its balance sheet holdings of mortgages and funding this with agency-priced debt. Now that Freddie Mac is a publicly traded company, competitive pressures from Fannie Mae may encourage Freddie Mac to implement this type of strategy. Funding mortgages with agency-priced debt is generally cheaper than securitization (funding with PCs), and results in a potentially higher level of profitability as well as risk.

Chart 3

Freddie Mac's Net Interest Margin

Net Interest Income/Interest Earning Assets



Source: Federal Home Loan Mortgage Corporation annual reports 1980 through 1989.

Management and Operations Risk

Overview

A review of Freddie Mac was performed to identify the controls and systems in place to monitor management and operations risks. The review relied primarily upon interviews with Freddie Mac officers to determine the existence of risk controls in five areas: (1) planning, (2) policy making, (3) control systems, (4) management information systems (MIS), and (5) personnel administration. Treasury focused on identifying management processes that exist to control the organization by monitoring the operations, identifying issues which may pose potential risk to operations, and implementing corrective measures.

Planning

Freddie Mac operates an organized planning process that considers the likely future effects of current decisions. The process also tracks Freddie Mac's success at meeting planned objectives. Under the direction of the Vice President (VP), Performance Management, Freddie Mac operates a formal planning process. This officer serves as the "keeper" of the corporate plan; however, the planning process itself is carried out in the individual business units. The VP of Performance Management works with the Controller to match the plans to the budget.

Planning occurs on three levels. The first level, strategic planning, takes a one- to three-year look into the future and identifies strategic goals. Operational planning, the second level, takes place annually when department heads estimate their 12-month goals and resource requirements. Management described operational planning as an iterative process that is constantly reviewed and updated. Activity costing, the third level, is also the responsibility of department heads, although Executive Vice Presidents review the costing activity for reasonableness. The CEO meets with division heads to assure consistency of planned goals across divisions. Final approval of the strategic plan, the financial budget, and the employment head count previously had rested with the old Board. The new Board will be the ultimate decision-making body within Freddie Mac regarding strategic matters. The practice of the new Board regarding such issues is to be worked out.

The established plan is also used as a control mechanism to monitor accomplishment of objectives and operating performance relative to budget. Each month, the VP of Performance Management reports the variances from the operating plan to division heads, the COO, and the CEO.

At the highest level, corporate-wide objectives are tracked and communicated quarterly through the Corporate Performance Scorecard. Corporate performance objectives are assigned priority weights to emphasize for staff the relative importance that senior management has assigned to the different objectives.

At the next level, management of each division receives a monthly results report that describes what individual divisions must accomplish to meet each of their objectives. In addition, each division receives a quarterly rating of its contribution to the operational plan.

Plans are communicated throughout the organization to provide employees a consistent understanding of Freddie Mac's goals. Freddie Mac's strategic plan is integrated into the annual plan and budget documents. The "Corporate Strategies, 1990 Plan and Budget" includes a mission statement, articulates corporate values, describes long-range corporate strategies drawn from analysis of three strategic variables (interest rate risk, credit risk and market position), and lists specific objectives derived from long-range strategies. Additional information is included which details Freddie Mac's operational plans and performance management reporting plans.

Because the strategic plan and the annual budget plan are both prepared annually on a "rolling" basis, they are able to remain consistent with each other.

Policy making

Freddie Mac's policy- and decision-making process works along lines defined by the organization chart. This process has allowed for policies to be debated and resolved at sufficiently high management levels and for consideration of the effects on organizational goals. However, senior management has not documented criteria and procedures for deciding which policy issues should be sent for review to the Board, a situation that creates at least the potential for misunderstanding regarding the proper range of managerial discretion.

At present, Freddie Mac operates a less formally organized policy-making process than other government-sponsored enterprises reviewed in this study. In part, this reflects certain structural and management changes that Freddie Mac was undergoing during the review. Between August 1989 and February 1990 Freddie Mac experienced two virtually complete changes of its Board of Directors. During these changes the organization continued to operate, but without the same degree of close, formal Board oversight that characterizes other GSEs with longer-standing Board structures. Simultaneously, Freddie Mac was preparing to make selected management changes, including some in key policy-making positions. These changes were effected in late

February 1990, shortly after the shareholders had elected their 13 members to the new post-FIRREA Board.

The pre-FIRREA and interim Boards of Directors did not appear to impose or require a formal and detailed policy-making process, but relied instead on the responsibility of senior officers to inform them of material changes to policies when appropriate. As a result, Freddie Mac does not presently document criteria or procedures for deciding among senior managers which policy issues or decisions should be sent to the Board for their review. Rather, the decision to forward issues to the Board appears to be made on an ad hoc basis, with the CEO taking advice from his senior managers and general counsel. Such an environment creates significant discretion to senior management and produces at least the potential for misunderstanding between management and the Board regarding the proper range of that discretion.

Generally, policy initiatives at Freddie Mac are initiated at the senior officer level, which also carries the responsibility to communicate them for comment across division lines. The revised policy, if material, is approved by the COO and the CEO, and is then communicated to customers and the Board if deemed necessary. The divisions of Risk Management and Marketing/Sales are the most actively involved in policy making. The most frequent questions of policy interpretation relate to client requests for waivers of underwriting standards in order to accomplish specific deals, two areas which are the domain of Risk Management and Marketing/Sales, respectively.

Freddie Mac described its formal policy development process for the Risk Management division, particularly as it relates to seller/servicers and revisions of waiver guidelines. Freddie Mac's CEO stated that higher level policy making in the risk management area takes place at the Credit Policy Committee, a small group of four principal officers -- two division heads (Risk Management and Marketing/Sales), the COO, and the CEO. The CEO stressed that he is the decision maker in this committee, and that the other members serve as advisors. The division head for Risk Management has responsibility for choosing which transactions he brings to the Credit Policy Committee, and thus serves as a control point for the Committee's agenda.

In other areas, responsibility for identifying strategic issues and recommending pertinent policies and procedures rests with the division heads. If a policy initiative or change is needed, division heads are encouraged to communicate the need to higher management. A task force is formed if it is necessary to bring other division executives into the policy development process. This style of policy-making reduces to a minimum the number of permanent management committees, and reflects the CEO's preference to avoid cumbersome committee systems.

The processes described above are supplemented and facilitated by two regular group meetings of senior officers and managers. The first is the Division Heads Meeting, a weekly roundtable of all division heads, chaired by the COO; it serves as a communication vehicle for senior officers to report activities in their respective divisions. The CEO stressed that this was not a policy-making forum, but that policy issues of common interest to the corporation may be identified in the course of the group's discussions. The second is the Deal Review Committee, a periodic meeting of the division heads from Risk Management and Marketing/Sales; two staff leaders from each of those divisions; the VPs of Structured Transactions, Product Management, and National Accounts; and the four Regional Vice Presidents. This committee reviews unusual financial transactions after they are completed. The principal reported purpose is to educate committee members regarding innovative financing transactions, and, through discussion, flag any policy issues for further review.

Management reports that policies and procedures for all areas are committed to writing, distributed through relevant positions, and continuously reviewed for timeliness and appropriateness. Where appropriate, decisions regarding policy changes are brought to the CEO for his approval. The CEO is the control point for deciding what matters must be passed to the Board of Directors for their review and approval; in this decision the CEO is assisted by the General Counsel (who also serves as Corporate Secretary), and by the advice of other senior officers. In order to assist the Board of Directors in performing its role, the new Board has created three standing committees: Audit, Capital, and Compensation. Each committee has a charter approved by the Board setting forth responsibilities with respect to management policies and procedures in its respective areas.

Control systems

Freddie Mac has the necessary systems, policies and procedures to monitor delegated activities, and the reporting processes to inform management of the soundness of the corporation's activities. Deficiencies noted by audits receive the prompt attention of senior management. The principal concern regarding Freddie Mac's control systems relates to the growth of ad hoc data reporting systems outside of Freddie Mac's primary computer systems; these are discussed below in the section on MIS.

Freddie Mac uses internal and external auditors (Arthur Anderson) to review the Corporation's systems for accuracy and integrity. The Internal Audit department has in the past reported to management as well as to the FHLBB in quarterly written reports. The new Board has appointed an Audit Committee that will ensure the internal auditor's independence from management. The external auditor meets independently with the Board and management to discuss any audit concerns and overall effectiveness of controls.

Internal Audit issues its reports directly to department heads, with copies sent to the CEO, COO, and the respective division head. Management has an opportunity to comment in the final report. Internal Audit reports a 98 to 99 percent acceptance rate by management of its recommendations. Concerns are followed up in six months to verify that management takes corrective action.

Internal Audit coordinates with the external auditors to keep each other informed of their work schedule and avoid unnecessary duplication of effort. The external auditors review the work of Internal Audit to determine acceptability.

Management information systems (MIS)

Freddie Mac has generally adequate MIS and controls to provide management and the Board the information needed to define goals, guide operations, and make timely decisions. However, the external auditor recently raised significant MIS concerns. Tremendous growth in the volume and types of financing products managed by Freddie Mac has caused certain users to develop their own supplemental and ad-hoc reporting systems that operate independently of Freddie Mac's primary computer system. The external auditor cited breakdowns in information communication and increased risk of errors due to reduced levels of management control. These concerns are discussed in more detail below.

The principal information collection system for Freddie Mac is the MIDAS system. Information from its core business functions (underwriting, purchasing, accounting, servicing, pooling, and securitizing) is stored on MIDAS. It was installed in 1982 and carries about 85 percent of the total information available to Freddie Mac. The latest addition to MIDAS was the Portfolio Management Information subsystem which was installed in 1985.

Freddie Mac's MIS is able to generate detailed reports on Freddie Mac's financial condition. The Board receives a monthly financial report that summarizes planned vs. actual performance of major balance sheet and income statement indicators. Freddie Mac uses monthly and quarterly performance management reports, including quarterly division-by-division performance rating scores, to control actual progress made toward division objectives and to alert senior management promptly of deviations from budget. Freddie Mac's MIS helps control credit risk during the purchasing of mortgage loans by running edit checks on the internal consistency of the information entered.

Freddie Mac is adapting its computer systems to meet future needs. This is particularly important in order to address the concerns of the external auditor. According to the Vice President/Controller, Freddie Mac is committed to a redevelopment effort that will design an integrated MIS rather than patch in pieces of the existing system. At present Freddie Mac's MIS lacks flexibility to generate information in a sufficient variety of ways to satisfy the needs of management. Freddie Mac has prepared future plans for MIS that address both system architecture and technology acquisitions that support this architecture. If successful, this redevelopment effort would address the concern recently raised by the external auditor, which principally deals with links between personal computers and the general ledger, i.e., off-line systems are riskier than on-line systems and the application programs are not as well documented.

Personnel administration

Management at Freddie Mac has devised the systems, policies and procedures important to the development and continuity of a qualified staff.

Personnel administration under the direction of the Human Resources department carries out four responsibilities: (1) employment services, (2) educational training and development, (3) compensation and benefits, and (4) employee relations/organizational development. Human Resources provides input to the organizational structure, but the decisions regarding organizational design lie with the heads of each operating area and the CEO or COO.

Job descriptions are initiated at the division level and reviewed by Human Resources. Human Resources uses a standardized grading system to ensure job ratings reflect skill and scope. Employees at all levels undergo formal annual performance appraisals. This system was recently revised to respond to concerns by the CEO that the distribution of ratings did not accurately reflect the quality of performance. Managers are now responsible for goal setting and are evaluated on their ability to perform performance appraisals. A significant change is the creation of a bonus pool for augmenting employee salaries; it is stratified by level of position in the company. The Board approves officer bonuses and the size of the total bonus pool. However, decisions to award individual managers and employees from the pool are made by management. Freddie Mac reports positive results from these personnel management changes.

Freddie Mac considers its salary and compensation structure competitive. It is formulated from an annual survey of comparatively sized corporations, with considerations to local market conditions where appropriate. Freddie Mac seeks to place itself in the top quarter of similar organizations in terms of the attraction of its compensation and benefits package.

Formal communication lines and systems exist to effectively communicate information throughout the organization. Examples include newsletters, circulars, electronic mailgrams, and videotaped messages from the CEO.

Conclusions and recommendations

Freddie Mac works with a clear understanding of management and operations risk. Although verification procedures were not performed, the controls, monitoring, and information systems incorporated by Freddie Mac provide for:

(1) organized planning;

(2) a structure for policy making;

(3) control systems reviewed by an internal audit office and supplemented by independent external audit services;

(4) computerized information storage and retrieval; and,

(5) established personnel administration procedures.

Treasury recognized that Freddie Mac was undergoing reorganization -- both at the management and Board levels -- during the period when our staff were performing their research and interviews. However, Treasury uncovered some issues relating to policy making and management information systems that are of concern.

Freddie Mac does not presently document the criteria or procedures for deciding among senior management which policy issues or policy decisions should be sent for review to the Board of Directors (the Board). While informal checks and balances on the appropriateness of management policy decisions do exist, the absence of documented criteria in this area creates significant discretion for senior management and the resultant potential for misunderstanding between management and the Board regarding the proper range of that discretion.

With regard to MIS, Freddie Mac faces shortcomings due to its failure to integrate all data entry and reporting systems into one computerized facility. Freddie Mac's senior management has stated that corrective measures and/or action plans are being implemented to address the MIS concerns. While the MIS shortcomings are an important concern, Freddie Mac was able to respond to every request for detailed financial and portfolio information in a timely manner.

Analysis of Capital

Overview

The primary focus of this study is the potential risk that Government-sponsored enterprises could pose for the Federal Government. Prior sections have discussed specific risks that ensue from Freddie Mac's activities. The riskiness of Freddie Mac from the Federal Government's point of view is a combination of these risks and its capitalization. Capital provides a buffer against adversity; the more capital a firm holds, the longer it can survive a period of financial difficulty before reaching the point of insolvency, other things being equal.

Clearly, the concept of capital adequacy includes risk. In simple terms, the more risk a firm undertakes, the more capital it needs. In this regard, Freddie Mac appears to have managed its risks well in the 1980s and did not face financial adversity that would have eroded its capital.

However, because of the legal changes that have previously been described, Freddie Mac has a new constituency of stockholders and a new board of directors. It is not clear what this will mean for corporate strategy in the future. It is, however, a principal contention of this study of Government-sponsored enterprises that, in order to protect the Federal Government, there needs to be a mechanism to provide incentives to manage risk prudently, in the absence of the same degree of market discipline that fully private corporations face.

The current highly leveraged financial position of Freddie Mac has led some observers to express concern about the potential risk of the need for the Federal Government to provide financial assistance to the company. These concerns have perhaps been heightened by developments in the savings and loan industry. While these concerns may be exaggerated, they need to be addressed.

This section examines Freddie Mac's capitalization by focusing on (1) the components that comprise the corporation's capital, (2) the trends that have led to the current high degree of leverage, (3) capital adequacy rules to which the corporation is currently subject or which some have suggested it should be required to meet, and (4) the Treasury's conclusions and recommendations concerning capital adequacy.

Components of capital

In order to analyze Freddie Mac's capitalization, the components that constitute its capital need to be examined. Since the perspective of this study is the potential risk Freddie Mac poses to the Federal Government, both equity capital and supplemental capital are examined. Supplemental capital includes subordinated debt and reserves for loan losses.

Table 17 shows the level of Freddie Mac's capital components and balance sheet assets and off-balance sheet mortgage participation certificates (PCs) for the past ten years. Table 18 shows annual growth rates of these components. Table 19 shows selected capital ratios over a ten-year period. Chart 4 depicts Freddie Mac's equity capital structure during the 1980s, and Charts 5 and 6 show trends in primary capital (equity plus loan loss reserves).

Equity capital[13]

As of December 31, 1989, Freddie Mac's equity capital was $1,915 million. The components were:

Non-Voting Common Stock	$ 100 million
Voting Common Stock	$ 150 million
Additional Paid-In Capital	$ 105 million
Retained Earnings	$1,560 million
Total Equity Capital	$1,915 million

Equity capital was $221 million in 1980 and has increased in every year since then.

Non-voting common stock. When Freddie Mac received its Federal charter in 1970, it was initially capitalized at $100 million with 100,000 shares of non-voting common stock issued to the Federal Home Loan Banks at a par value of $1,000 per share. The Federal Home Loan Banks were barred from selling the shares to entities other than themselves.

This stock, by the terms of its issuance and pursuant to Federal law, was callable at its par value. On February 6, 1990, the new board of directors of Freddie Mac decided to call the non-voting common stock. The board declared that the startup capital of $100 million had served its purpose. Also, because of the relatively high dividends paid on this stock, it was an expensive form of capital. The Federal Home Loan Banks were paid the par value of the shares on February 7, 1990. The immediate effect of this transaction was to reduce Freddie Mac's capitalization by $100 million and to eliminate the non-voting common stock.

Preferred stock and voting common stock. Freddie Mac currently has no preferred stock outstanding. However, this is a recent development.

In December 1984, Freddie Mac distributed $150 million of non-voting participating preferred stock to the Federal Home Loan Banks, which in turn distributed the shares to their members. However, this distribution raised no capital for Freddie Mac.

The par value was achieved on the books by transferring $100 million from "capital in excess of par value" (which had been transferred to this account from retained earnings in 1978 and 1979) and $50 million from retained earnings. The Federal Home Loan Bank members receiving these shares did not pay for them; rather, they were treated as a taxable dividend.

The participating preferred shares were listed on the New York Stock Exchange, but ownership was restricted to Federal Home Loan Bank members, approved market makers, Freddie Mac itself, and certain other entities such as the Federal Home Loan Banks, the Federal Savings and Loan Insurance Corporation, and the New York Stock Exchange.

During the latter half of 1988, virtually all of the participating preferred stock was exchanged for senior preferred stock. This new class of preferred stock was unrestricted with respect to transferability; consequently, ownership of Freddie Mac was opened up to the general public. However, the senior preferred stock did not convey voting rights.

Each share of participating preferred stock surrendered during the exchange offer, having had a par value of $10.00 per share, was exchanged into 4 shares of senior preferred stock having a par value of $2.50 per share. In addition, holders of the participating preferred stock were required to pay Freddie Mac $7.00 for each share they exchanged. This exchange charge raised $104 million of additional paid-in capital. The new shares were listed on the New York and Pacific Stock Exchanges.

As a consequence of FIRREA, the senior preferred stock was converted into voting common stock. This conversion did not affect the amount of Freddie Mac's capitalization. Consequently, FIRREA resulted in a corporation with two classes of common stock in 1989 and no preferred stock.

As discussed above, Freddie Mac has had outstanding only one class of common stock since February 7, 1990. There are outstanding approximately 60 million shares of this voting common stock, with a market value at the end of April 1990 of about $3.9 billion at a stock price of $64.625. The board of directors, with the approval of the Secretary of HUD, may authorize additional issuance of shares of voting common stock.

FIRREA also allows the board of directors of Freddie Mac to limit the concentration of ownership of its common stock. Currently, no one holder of Freddie Mac voting common stock is permitted to hold more than 2.4 million shares, representing approximately 4 percent of the voting common stock outstanding. This follows a similar policy of the old board of directors (the Federal Home Loan Bank Board) which had initially restricted the ownership of the participating preferred stock to 1 percent of the total outstanding. During the latter half of 1988, when the participating preferred stock was exchanged for senior preferred stock, the permissible concentration of ownership was increased in stages. When the exchange offer terminated at the beginning of 1989, the concentration of ownership restriction was set at 4 percent.

The new board of directors has the flexibility to change or abolish the restriction on concentration of ownership of voting common stock. With the Freddie Mac board empowered to restrict ownership of its voting common stock, it can be fairly said that the corporation is not a hostile takeover candidate, regardless of its Federal Government ties. Also, the current restriction on ownership ensures broad distribution of the stock. On the other hand, liquidity may be hampered in certain instances when major potential purchasers are precluded from buying the stock, for example, in a general market decline.

Retained earnings. The most significant means of increasing equity capital for Freddie Mac during the 1980s was retained earnings. Over the decade, retained earnings, as stated on the balance sheet, were the fastest growing component of capital. They grew from $21 million at the end of 1980 to $1,560 million at the end of 1989, an increase of over 74 times. However, from 1980 to 1983, there was $100 million carried on the books as capital in excess of par, which should be added to the reported retained earnings. This amount was transferred in 1977 and 1978 from retained earnings and then in 1984 was, in effect, distributed as participating preferred stock. Accounting for this, the story told by retained earnings is less dramatic but still does indicate the profitability of Freddie Mac over the past decade. Retained earnings under this definition increased by 12.9 times from year-end 1980 to year-end 1989. They represented 54.8 percent of equity capital in 1980, and increased, as above, to 81.5 percent in 1989. Tables 17 and 18 and Chart 4, which show the level and growth of Freddie Mac's capital components, use this adjustment for computing the level and growth of retained earnings.

Supplemental capital[14]

Subordinated debt. Freddie Mac has had subordinated debt outstanding since 1978. As of December 31, 1989, Freddie Mac carried on its books $2,046 million of subordinated debt. This is an increase of 10.2 times from the amount of subordinated debt outstanding in 1980.

Freddie Mac's subordinated debt consists of capital debentures maturing from 1995 to 2016 and zero-coupon capital debentures maturing from 1992 to 2019. At the end of 1989, the regular capital debentures were carried on the balance sheet at $1,254 million, and the zero-coupon capital debentures at $792 million. Freddie Mac issued the zero-coupon subordinated debt in 1982 and 1984. Of the three issues outstanding, the largest maturing amount, $4.6 billion, is payable in 2019.

Freddie Mac's subordinated debt is due and payable in the case of certain events of bankruptcy, insolvency or reorganization of Freddie Mac or its property. Consequently, this might limit or complicate the Federal Government's ability to rely on the subordinated debt as capital in the case of insolvency.

Loan loss reserves. Loan loss reserves have steadily increased from $74 million at the end of 1980 to $466 million at the end of 1989. This increase of 6.3 times is in line with the increase of Freddie Mac's total assets (6.5 times), but it is less than half the multiple that total assets plus PCs increased over the same period (13.7 times). Freddie Mac's annual allocation of reserves, though, has been greater than actual loss experience.

Capital ratios and trends

As of December 31, 1989, Freddie Mac had the following overall capital ratios:

Equity Capital/Assets and PC	.62%
Primary Capital/Assets and PC	.77%
Total Capital[15]/Assets and PC	1.44%
Loan Loss Reserves/Assets and PC	.15%

PCs have been summed with assets in the computations since they represent commitments for the corporation which are a potential claim on assets. While the ratios provide a picture of high leverage at a point in time, they are by themselves insufficient to determine the corporation's capital adequacy.

Another means of analyzing Freddie Mac's capital position is to examine change over time. Since 1980, the growth of Freddie Mac's capital has not kept pace with the growth of the corporation's total assets plus PCs outstanding (see Tables 17 and 18). However, these growth rates have been more in line with each other since the end of 1982.

As depicted on Chart 5, the growth rate of primary capital, though somewhat less, has been in line with the growth of the corporation since 1982. The primary capital ratio, as shown on Chart 6, declined from 1.31 percent in 1980 to 0.77 percent in 1989, with most of this decline taking place during 1982. It was in 1982 that Freddie Mac's PC business grew very rapidly, with a 116% increase in PCs outstanding from year-end 1981 to year-end 1982.

While the trends in Freddie Mac's capital ratios since 1980 may not be completely reassuring, comparisons of leverage ratios between 1980 and 1989 should be made with caution. There is reason to believe that Freddie Mac's current business is probably somewhat less risky than it was in 1980. The PC portion of Freddie Mac's business has increased from 76% to 88% on a book value basis, a percentage shift that was accomplished in 1982. Securitizing mortgages is a business activity that does not have the interest rate risk inherent in being a portfolio lender. Also, as indicated previously, the credit risk characteristics of Freddie Mac's mortgages (both retained and securitized) have improved, particularly with the introduction of more stringent underwriting standards in 1985.

Freddie Mac's stated policy is to determine its appropriate capital level by the use of a stress test, which is discussed below. Consequently, management does not attribute much importance to the relatively constant ratio of equity capital to total assets plus PCs since year-end 1982, averaging about 0.6 percent (see Table 19). According to the stress test Freddie Mac has developed and used, the corporation's financial strength has improved in recent years, for reasons discussed below. If economic conditions were to change, such that the stress test indicated the corporation could survive the assumed stress only for a shorter period than currently is the case, management's stated policy would imply a need to increase capital.

Capital adequacy standards

HUD requirements. FIRREA imposes a capital requirement on Freddie Mac of unsecured debt to total capital (equity, loan loss reserves, and unadjusted subordinated debt) of 15 to 1. This ratio requirement can be increased, i.e., made less stringent, by the Secretary of HUD. At the end of 1989, Freddie Mac's actual ratio was 4.25 to 1.

Since Freddie Mac has a relatively small amount of assets on the balance sheet that are financed with unsecured debt, the HUD capital requirement is neither constraining nor appropriate. The ratio requirement does nothing to limit Freddie Mac's PC business. Moreover, the HUD requirement does not take into account the quality of Freddie Mac's assets or any interest rate risk it may have in financing these assets. In other words, this type of rule is not a meaningful standard to assure that Freddie Mac is adequately capitalized.

However, unless HUD were to increase the ratio, as it has done for Fannie Mae, the 15 to 1 requirement would prevent Freddie Mac, at its current level of capitalization, from acquiring a portfolio of mortgages comparable in size to Fannie Mae's and financed with unsecured debt. At year-end 1989, Freddie Mac's unsecured debt amounted to $18.8 billion. The ratio requirement permits unsecured debt to increase to $66.4 billion given Freddie Mac's capital (as defined by the HUD requirement) of $4.4 billion.

Bank and thrift risk-based capital standards. The risk-based capital rules that the bank and thrift regulatory agencies have recently promulgated are the latest developments in regulatory capital standards. These rules seek to reflect the relative levels of credit risk related to certain assets typically held by bank and thrift institutions by assigning them percentage weights to be used in calculating adjusted asset values. Because it has been suggested that these rules be made applicable to Freddie Mac, and calculations by others have been done, the Treasury calculated for this study how a literal application of these rules would affect Freddie Mac. Any discussion of this subject must start with the recognition of a basic fact: Freddie Mac does not come close to meeting the capital level a literal reading of these rules would require.[16] Proponents of applying these rules need to know the magnitude of the capital requirement they are advocating, while opponents need to consider the size of the shortfall.

The risk-based capital requirements for commercial banks and thrift institutions result in virtually identical amounts of risk-based assets for Freddie Mac's on- and off-balance sheet positions as of December 31, 1989. Table 20 shows a summary of the calculations of these amounts under the two rules. Table 21 shows the amount of capital Freddie Mac would need at year-end 1989 to meet the requirements of these rules. According to Treasury estimates, required total capital under both rules would be $12.3 billion. However, how this could be raised differs between the two rules.

Both the commercial bank and thrift capital rules limit the amount of Tier 2 capital allowed to meet the total requirement to the amount of Tier 1 capital, and both rules discount the value of subordinated debt based on its remaining time to maturity,[17] since any debt which matures in the near future is unlikely to be available to meet future capital needs. In addition, the commercial bank capital rules limit the amount of subordinated debt that is allowed to meet the requirement to 50 percent of Tier 1 capital. In order to meet the commercial bank and thrift capital rules, a minimum of $4.2 billion would have to be raised in equity capital. Both rules would permit the remaining necessary capital increase of $3.9 billion to be met by other than equity capital, but the commercial bank capital rule would limit the increase in subordinated debt to $1.3 billion.[18]

Since Freddie Mac has little or no interest rate risk on its PCs and mortgages financed by multiclass securities, it may be considered appropriate to decrease the amount of capital required to support them, after adjustment by the risk factors in the rule, from 8 percent to 6 percent, the reduction the Office of Thrift Supervision has proposed once an additional interest rate risk capital requirement is in force. This still would result in substantial increases in required capital. As shown on Table 22, the minimum necessary increase in total regulatory capital would be $5.4 billion. Equity capital would have to be increased by

$2.9 billion under the bank rule, and only slightly less under the thrift rule.

Recognizing that as of year-end 1989, only 80 percent of the 8 percent requirement for thrifts was in effect, Tables 21 and 22 also show the requirement with this reduction, with and without a 25 percent reduction for the PCs and mortgages financed by multiclass securities. Even with benefit given for the lack of interest rate risk on PCs and mortgages financed by multiclass securities, such a rule would have required Freddie Mac to increase its equity capital by $1.9 billion.

While the bank and thrift risk-based capital rules may be a useful framework for thinking about capital requirements for Freddie Mac, they are not appropriate in their present form for determining Freddie Mac's capital adequacy.

There are significant differences between the nature of Freddie Mac's business and that of banks and thrifts subject to the new risk-based capital requirements. These differences include national diversification, the constraints on the types of business Freddie Mac can enter and resulting concentration in low risk mortgage loans, the receipt of guarantee fee income, and the greater control Freddie Mac has of the liability side of its balance sheet due to its access to the capital markets and to its not being a deposit-taking institution. These differences suggest that a general capital standard devised for diversified depository institutions with primarily local or regional operations is not appropriate, though it should be noted that there is an increasing concentration of mortgage originations in large banks and thrifts which are subject to the risk-based rules.

The rules also do not take into account the differences in credit quality among different types of mortgages. Because Freddie Mac's business is concentrated in mortgages, any capital standard to which the corporation should reasonably account for different credit risk characteristics of the mortgages it holds in portfolio or has securitized. Important characteristics would include LTV ratios, variable or fixed interest rate, term to maturity, balloon payment at maturity, etc.

In addition, the bank and thrift risk-based capital rules do not currently factor in interest rate risk. While Freddie Mac's current retained portfolio is small in relation to its PC business, the corporation could choose to increase the size of the retained portfolio. The current bank and thrift capital rules would not provide any incentive to manage the interest rate risk inherent in financing a portfolio of mortgages in a prudent manner.

Financial standards for mortgage insurers. Freddie Mac's PC business has some similarities to the mortgage insurance business. Consequently, the Treasury examined the appropriateness to Freddie Mac of the financial standards applicable to private mortgage insurers.

Private mortgage insurers are subject to state requirements which in general relate capital requirements to the percent coverage of an insured mortgage. For example, a typical requirement would be for $0.80 of capital (defined as net worth plus contingency reserves) per $100 face amount of a mortgage which has 20 percent insurance coverage. This requirement would typically go up to $2.00 for 100 percent insurance coverage.

Private mortgage insurers are also rated by the statistical rating agencies on the basis of stress tests, among other criteria. However, since the top rated mortgage insurers are rated in part on the basis of a financially strong parent, this makes comparisons of the financial condition of these private mortgage insurers and Freddie Mac all but impossible.

While Freddie Mac's mortgage participation certificate business has certain similarities to mortgage insurance, it is sufficiently different that the financial standards that apply to mortgage insurers are not directly applicable. Most, if not all, mortgages that are privately insured have LTVs greater than 80 percent. Freddie Mac, in fact, benefits from this private mortgage insurance and only bears the secondary risk of loss in the case the private mortgage insurer fails or the loss is greater than the amount covered. The lower LTV loans that do not carry private mortgage insurance are also less risky and thus the state requirements are not appropriate.

Freddie Mac's management believes that stress tests are an appropriate way to assess capital adequacy and have devised their own, as discussed in the next section. Because of the different nature of the risks that Freddie Mac faces, the stress tests that rating agencies apply to private mortgage insurers would have to be substantially modified.

Freddie Mac's stress test. Freddie Mac uses a stress test to determine its capital adequacy. Freddie Mac has designed a stress test that simulates the impact on its capital from projections of expected default, prepayments, and losses for its purchased mortgages under adverse conditions as described by Moody's in its Great Depression economic scenario. Freddie Mac's own criteria for passing its test is to survive for at least ten years before running out of primary capital. They use the results of this test to support the adequacy of the current level of capital. A complete analysis of Freddie Mac's stress test is contained in the Addendum to this appendix.

At the end of 1989, Freddie Mac survived slightly over 10.5 years. Freddie Mac has not always fared as well. In 1987 Freddie Mac survived about 5 years, and in 1988 it lasted about 9 years. The main reason for Freddie Mac's improvement is that the large number of loans booked during the 1986 and 1987 period have seasoned. Steady housing price inflation, at least for most parts of the country during the 1986-89 period, increased the amount of homeowner's equity in these properties. This had the effect of decreasing Freddie Mac's exposure to default risk in the early years of the stress test, enabling it to maintain its stream of guarantee fee income for a longer period of time. Freddie Mac's future stream of guarantee fee income supplements capital over time in the role of providing a buffer to losses from mortgage defaults. Also contributing to its improvement was an increase in its ratio of primary capital to assets and PCs from .64 in 1987 to .77 in 1989.

Freddie Mac's stress test is a good management tool for helping to assess the credit risk exposure of its current book of business. It is a major improvement over targeting a simple capital ratio, since Freddie Mac's stress test attempts to relate risk (credit risk) to capital requirements. However, from the perspective of the Federal Government, a stress test by itself is not adequate for measuring capital adequacy.

An important shortcoming of a stress test is that it does not measure management risk. During a stressful period, the market's belief in the implicit Federal guarantee might provide incentives for management to undertake more risk in an effort to improve financial performance. Freddie Mac, for example, could at any time increase its interest rate risk by funding a higher percentage of its mortgage purchases with debt. Underwriting standards might be loosened, thereby increasing credit risk, so that Freddie Mac could book more business and generate more fee income.

A stress test involves the use of behavioral models for default and prepayment whose parameter estimates are based on recent, or "normal", conditions. The assumptions relating defaults to losses, such as transactions costs, REO holding period, etc., also are all based on recent experience. While reasonable changes in individual parameters of the stress test only modestly impact the results, it would not be unreasonable to assume that more than one parameter value might change in a stressful environment. If this occurred, the impact on Freddie Mac's capital requirements would be compounded, and the results of its stress test as currently modeled could change considerably.

A truly stressful economic scenario would encompass changes in behavioral relationships and changes in the functioning of financial markets that would not be known in advance. Under stressful conditions, Freddie Mac would have to price products with different and unknown risk characteristics. There would be a learning curve, and possibly a steep one, to adapt to the new conditions.

Marked-to-market capital. Freddie Mac's management believes that marked-to-market capital is an important measure of capital adequacy, and the Price Waterhouse report which it commissioned uses this measure.[19] Capital computed according to generally accepted accounting principles (GAAP) is the standard measure of capital used to analyze a going concern. Changes in marked-to-market capital due to interest rate changes are a useful tool to measure the corporation's interest rate risk, and marked-to market capital can also be used to estimate a firm's current liquidation value. In this respect, capital rules for broker-dealers are based on current market value on the asset side of the balance sheet, because liquidation is contemplated for broker-dealers which become insolvent. Also, in the computation of net capital, the broker-dealer capital rules disallow assets which are not easily liquidated.

The computation of marked-to-market capital introduces an element of subjectivity into the measure of capital, since there are no established standards for this measurement. It also introduces an element of randomness due to transitory market conditions that are not really relevant to the economic condition of the firm or its earnings outlook. Since liquidation of Freddie Mac is not a development that is contemplated, the GAAP measure of capital has been the focus of this analysis.

Guarantee fee income that Freddie Mac will receive in the future is not considered an asset under GAAP accounting. There are two ways to view guarantee fee income. Under marked-to-market accounting, guarantee fee income is evaluated at an estimate of its present value, which will fluctuate as interest rates change. Under GAAP, guarantee fee income is a component of total income that will be reflected in the income statements in the future. The relative certainty that it will be a significant future source of income should be factored into a judgment of adequacy of capital when measured by GAAP.

Conclusions and recommendations

While Treasury's examination of Freddie Mac's capital adequacy does not lead to a conclusion that the current degree of leverage presents an imminent threat, the Treasury is concerned about its significance for the longer term. For example, a lower rate of inflation in the price of housing than prevailed in the past decade would, by Freddie Mac's own analysis, lead to some deterioration in the credit risk of the mortgage portfolio (both retained and securitized) due to a slowing in the rate of buildup of owner equity in the underlying properties. The Treasury believes that prudence requires that Freddie Mac hold more capital to meet today's identified risks and tomorrow's unforeseen risks in order to protect more fully the financial markets and the Federal Government from a potential Freddie Mac failure. In fact, even though Freddie Mac professes that it is satisfied that its current level of capitalization is adequate, Freddie Mac's own projections indicate that the corporation's capital will increase faster than its assets and PCs outstanding over the next few years.

An assessment of capital adequacy for an entity as unique as Freddie Mac must be somewhat subjective. The Treasury's examination of existing regulatory capital standards indicates that none, in their current form, are appropriate for Freddie Mac.

The capital ratio that FIRREA imposes on Freddie Mac (the HUD requirement) is an inadequate and simplistic test of capital adequacy. Among other shortcomings, it does not link capital to the level of outstanding PCs. It currently does not constrain any portion of Freddie Mac's business.

The commercial bank and thrift risk-based capital rules, while they do account for off-balance sheet liabilities, are also not appropriate for Freddie Mac, for the reasons stated earlier. While the corporation's current substantial shortfall from the risk-based standards may represent a cause for concern, the risk-based capital computations do not reflect the substantial financial protection the corporation derives from the future stream of guarantee fee income. Though the timing and amount of these guarantee fee receipts can only be estimated, under all scenarios they provide a significant level of future capital support which must not be overlooked in an evaluation of capital adequacy.

A capital standard that makes conceptual sense for Freddie Mac would include a measure of interest rate risk and credit risk for different types of assets, both on and off the balance sheet. Such a standard would probably focus on primary capital, since it is unclear whether the Federal Government could rely on Freddie Mac's subordinated debt in the case of insolvency. It would also recognize the substantial buffer to adversity that the continuous stream of guarantee fee income provides in addition to balance sheet capital. New products, such as different types of mortgage instruments, would initially require substantially more capital until experience demonstrated their relative riskiness.

The most important functions of a capital standard for Freddie Mac are (1) to provide incentives not imposed by the market for the corporation to manage its risks carefully and (2) to serve as a monitoring device of changes in its financial condition. While Freddie Mac's excellent financial performance in the 1980s, during a period when other financial institutions involved in home mortgages experienced difficulties, is reassuring, the Treasury believes that there should be mechanisms in place to perform these functions for GSEs. In particular, with respect to Freddie Mac, recent legislative changes may result in pressure on Freddie Mac's management to undertake more risk from a new constituency of stockholders primarily concerned about profitability. Consequently, a capital standard for Freddie Mac would also be useful as a mechanism to counteract this pressure for greater risk-taking. Freddie Mac's current capitalization does not provide much margin for error.

Given the disruption to capital markets that a potential financial collapse of Freddie Mac would cause and the strong pressure this would put on the Congress to pass rescue legislation, the Treasury believes that a combination of regulatory oversight and a capital adequacy standard that is tailored to the unique nature of Freddie Mac's business are necessary. The body exercising the regulatory responsibility would need to be flexible and knowledgeable enough to adapt to a rapidly changing marketplace. While it has not been determined what an appropriate capital standard should be for Freddie Mac, any capital adequacy standard applicable to Freddie Mac should be structured both to provide an adequate protective cushion against adversity and to provide incentives for Freddie Mac to manage its risks prudently.

Table 17
Freddie Mac Capital Components

($ millions, year-end)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Stock & Additional Paid-in Capital	100	100	100	100	250	250	250	250	354	355
Retained Earnings	121	150	196	321	356	529	703	932	1,230	1,560
Equity Capital	221	250	296	421	606	779	953	1,182	1,584	1,915
Primary Capital	295	338	399	556	780	990	1,231	1,516	1,976	2,381
Subordinated Debt	200	200	466	491	811	993	1,997	2,086	2,036	2,046
Reserves for Loan Losses	74	88	103	135	174	211	278	334	392	466
Supplemental Capital	274	288	569	626	985	1,204	2,275	2,420	2,428	2,512
Total Capital	495	538	865	1,047	1,591	1,983	3,228	3,602	4,012	4,427
Balance Sheet Assets*	5,487	6,335	6,029	8,955	13,174	16,360	23,310	25,770	34,455	35,581
Mortgage Participation Certificates (PCs)	16,962	19,897	42,952	57,990	70,920	100,507	169,186	212,635	226,406	272,870
Total Balance Sheet Assets & PCs	22,449	26,232	48,981	66,945	84,094	116,867	192,496	238,405	260,861	308,451
On- and Off-Balance Sheet Breakdown										
Balance Sheet Assets	24%	24%	12%	13%	16%	14%	12%	11%	13%	12%
Mortgage Participation Certificates	76%	76%	88%	87%	84%	86%	88%	89%	87%	88%

*Balance sheet assets are adjusted by adding back in loan loss reserves.

Source: Treasury calculations based on data supplied by Freddie Mac.

Table 18
Freddie Mac Growth Rates

(%, year-end over year-end)

	1981	1982	1983	1984	1985	1986	1987	1988	1989
Stock & Additional Paid-in Capital	0	0	0	150	0	0	0	42	0
Retained Earnings	24	31	64	11	49	33	33	32	27
Equity Capital	13	18	42	44	29	22	24	34	21
Primary Capital	15	18	39	40	27	24	23	30	20
Subordinated Debt	0	133	5	65	22	101	4	-2	0
Reserves for Loan Losses	19	17	31	29	21	32	20	17	19
Supplemental Capital	5	98	10	57	22	89	6	0	3
Total Capital	9	61	21	52	25	63	12	11	10
Balance Sheet Assets	15	-5	49	47	24	42	11	34	3
Mortgage Participation Certificates (PCs)	17	116	35	22	42	68	26	6	21
Total Balance Sheet Assets & PCs	17	87	37	26	39	65	24	9	18

Source: Treasury calculations based on data supplied by Freddie Mac.

Table 19
Freddie Mac Capital Ratios

(%, year-end)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Equity Capital Ratios										
Equity capital to assets	4.03	3.95	4.91	4.70	4.60	4.76	4.09	4.59	4.60	5.38
Equity capital to PCs	1.30	1.26	0.69	0.73	0.85	0.78	0.56	0.56	0.70	0.70
Equity capital to assets & PCs	0.98	0.95	0.60	0.63	0.72	0.67	0.50	0.50	0.61	0.62
Total Capital Ratios										
Total capital to assets	9.02	8.49	14.35	11.69	12.08	12.12	13.85	13.98	11.64	12.44
Total capital to PCs	2.92	2.70	2.01	1.81	2.24	1.97	1.91	1.69	1.77	1.62
Total capital to assets & PCs	2.20	2.05	1.77	1.56	1.89	1.70	1.68	1.51	1.54	1.44
Other Ratios										
Primary capital to assets & PCs	1.31	1.29	0.81	0.83	0.93	0.85	0.64	0.64	0.76	0.77
Supplemental capital to total capital	55.35	53.53	65.78	59.79	61.92	60.72	70.48	67.18	60.52	56.74
Loan loss reserves to assets & PCs	0.33	0.34	0.21	0.20	0.21	0.18	0.14	0.14	0.15	0.15

Source: Treasury calculations based on data supplied by Freddie Mac.

Table 20
Freddie Mac Risk-Weighted Balance Sheet

As of December 31, 1989
($ millions)

		Under Commercial Bank Rule		Under Thrift Rule	
	Amount	Risk Weighting	Adjusted Amount	Risk Weighting	Adjusted Amount
Balance Sheet Mortgages					
1-4 Family	11,809	50%	5,905	50%	5,905
Multifamily	3,501	100%	3,501	50%/100%	3,239
Second	379	100%	379	100%	379
Government insured/guaranteed	530	20%	106	20%	106
Mortgages financed by multiclass debt	5,632	20%	1,126	20%	1,126
Unamortized mortgage purchase discount	(404)	Weighted	(224)	Weighted	(224)
Total Balance Sheet Mortgages	21,447		10,793		10,531
Other Balance Sheet Assets					
Cash	72	0%	0	0%	0
Investments	5,324	20%/100%	1,783	20%/100%	1,783
Mortgages purchased for resale	5,765	20%	1,153	20%	1,153
Unamortized mortgage sales discount	928	100%	928	100%	928
Accounts/Accrued interest receivable	1,610	20%/50%	390	20%/50%	390
Real estate owned (net)	271	100%	271	200%	542
Other assets	164	100%	164	100%	164
Total Other Balance Sheet Assets	14,134		4,689		4,960
Total Balance Sheet Assets	35,581		15,482		15,490
Mortgage Participation Certificates					
1-4 Family	262,027	50%	131,014	50%	131,014
Multifamily	6,810	100%	6,810	50%/100%	6,299
Government insured/guaranteed	4,033	20%	807	20%	807
Total PCs	272,870		138,630		138,119
Total Balance Sheet Assets & PCs	308,451		154,112		153,610

Detail may not sum due to rounding.

Source: Treasury calculations based on data supplied by Freddie Mac.

Risk-Based Capital Ratio

Regulatory Capital	Under Commercial Bank Rule	Under Thrift Rule
Tier 1 Capital	1,915	1,915
Tier 2 Capital	1,424	1,915
Total Capital Base	3,339	3,830
Total Capital Base as percentage of Total Balance Sheet Assets & PCs	2.17%	2.49%

Table 21
Capital Required Under Commercial Bank and Thrift Risk-Based Capital Standards

As of December 31, 1989
($ millions)

	Commercial Bank Rule	Thrift Rule	Current Thrift Rule*
Risk-Adjusted Amount of Total On- & Off-Balance Sheet Items			
Total Balance Sheet Assets	15,482	15,490	15,490
Mortgage Participation Certificates	138,630	138,119	138,119
Total Risk-Adjusted Amount	154,112	153,610	153,610
Required Capital			
Tier 1 Capital (4%)	6,164	6,144	4,916
Total Capital (8%)	12,329	12,289	9,831
Regulatory Capital Held As of December 31, 1989			
Tier 1 Capital	1,915	1,915	1,915
Tier 2 Capital (allowable)	1,424	1,915	1,915
Total Regulatory Capital Held	3,339	3,830	3,830
Total Capital Shortfall	8,990	8,459	6,001
Increase in Capital**			
Tier 1 Capital (minimum)	4,249	4,229	3,001
Subordinated Debt (maximum)***	1,321	3,917	2,689
Other than Subordinated Debt	2,616	--	--
Minimum Necessary Increase in Total Capital	8,187	8,147	5,689

Detail may not add due to rounding.

*Until December 30, 1990, the thrift rule is 80% of the final capital requirement.

**The increase in capital takes into consideration capital currently held but which is not permissible to meet the risk-based capital standard.

***The commercial bank rule limits subordinated debt to 50% of T1C. The thrift rule does not put a limit specifically on subordinated debt other than to limit T2C to 100% of T1C. Thus, for the thrift rule, the increase in other than T1C may be accomplished completely with subordinated debt or with capital other than subordinated debt.

Source: Treasury calculations based on data supplied by Freddie Mac.

Table 22
Capital Required Under Commercial Bank and Thrift Risk-Based Capital Standards After Credit for Interest Rate Risk

As of December 31, 1989
($ millions)

	Commercial Bank Rule	Thrift Rule	Current Thrift Rule*
Risk-Adjusted Amount of Total On- & Off-Balance Sheet Items			
Mortgages financed by Multiclass Debt	1,126	1,126	1,126
Total Other Balance Sheet Assets	14,356	14,364	14,364
Mortgage Participation Certificates	138,630	138,119	138,119
Total Risk-Adjusted Amount	154,112	153,610	153,610
Capital Required Against:			
Mortgages financed by Multiclass Debt (6%)	68	68	54
Other Balance Sheet Assets (8%)	1,148	1,149	919
PCs (6%)	8,318	8,287	6,630
Total Required Capital	9,534	9,504	7,603
Regulatory Capital Held As of December 31, 1989			
Tier 1 Capital	1,915	1,915	1,915
Tier 2 Capital (allowable)	1,424	1,915	1,915
Total Regulatory Capital Held	3,339	3,830	3,830
Total Capital Shortfall	6,195	5,674	3,773
Increase in Capital**			
Tier 1 Capital (minimum)	2,852	2,837	1,887
Subordinated Debt (maximum)***	622	2,525	1,575
Other than Subordinated Debt	1,917	--	--
Minimum Necessary Increase in Total Capital	5,392	5,362	3,461

Detail may not add due to rounding.

*Until December 30, 1990, the thrift rule is 80% of the final capital requirement.

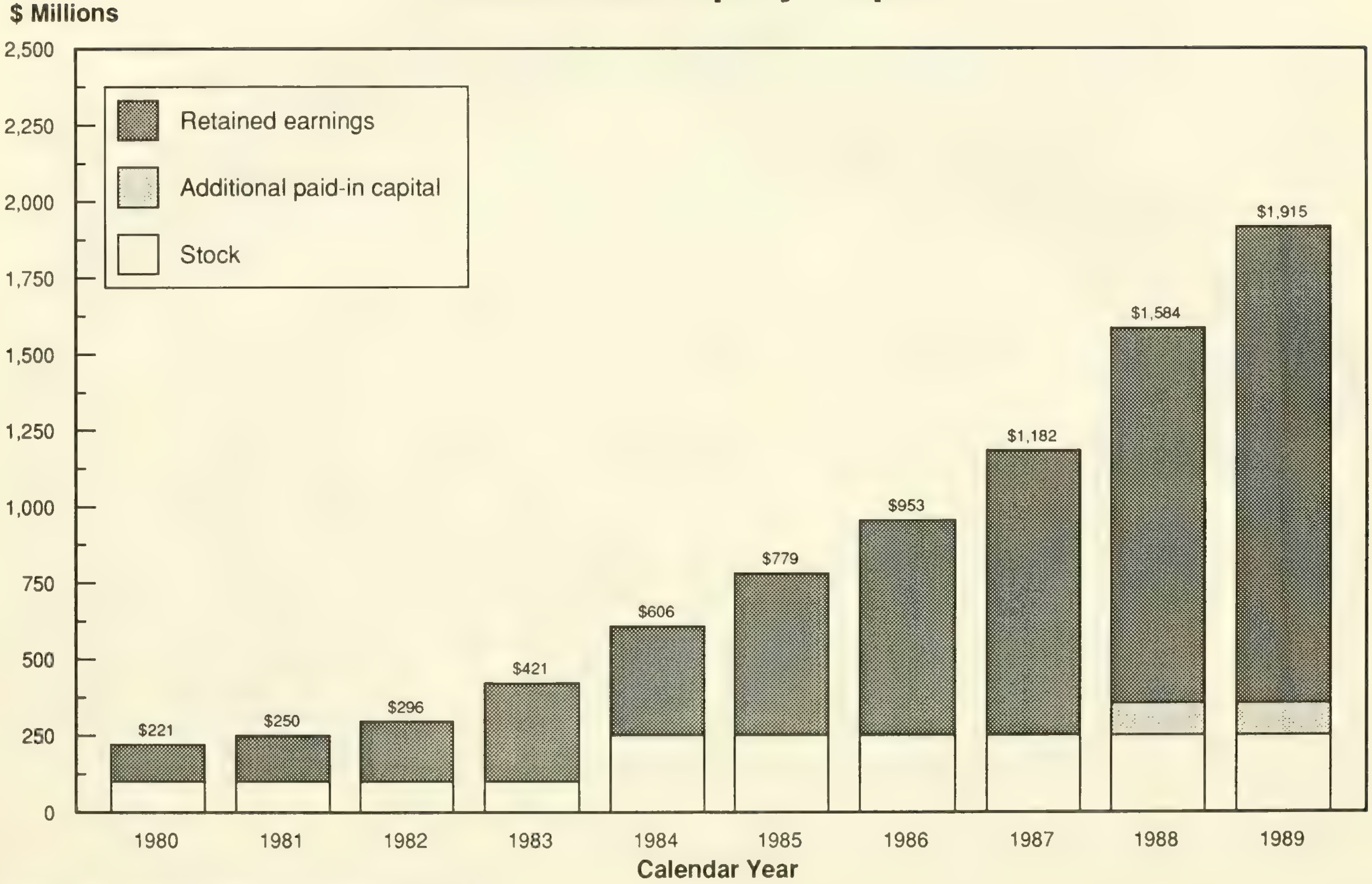
**The increase in capital takes into consideration capital currently held but which is not permissible to meet the risk-based capital standard.

***The commercial bank rule limits subordinated debt to 50% of T1C. The thrift rule does not put a limit specifically on subordinated debt other than to limit T2C to 100% of T1C. Thus, for the thrift rule, the increase in other than T1C may be accomplished completely with subordinated debt or with capital other than subordinated debt.

Source: Treasury calculations based on data supplied by Freddie Mac.

Chart 4

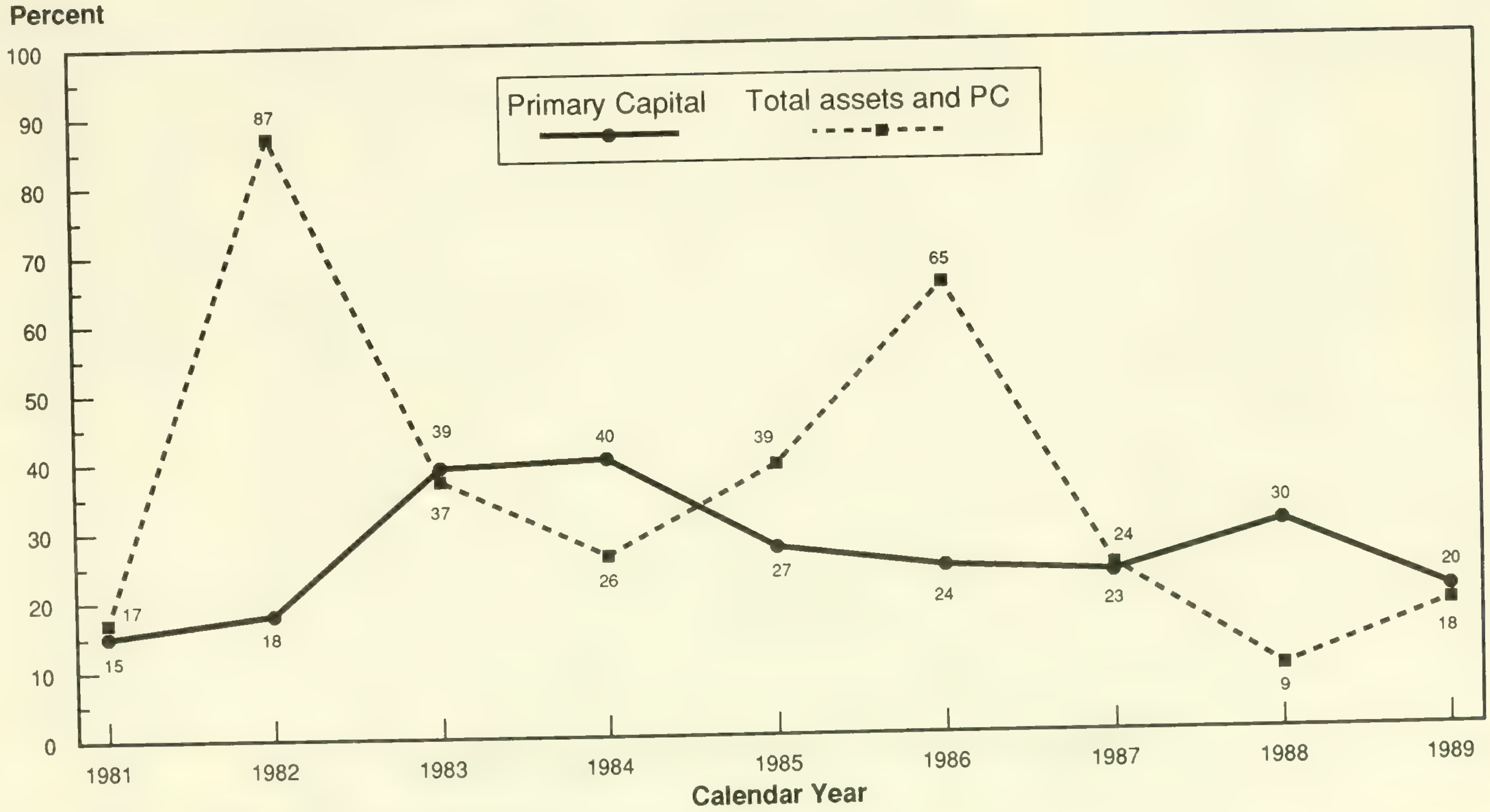
Freddie Mac Equity Capital



Source: Treasury calculations based on data supplied by Freddie Mac.

Chart 5

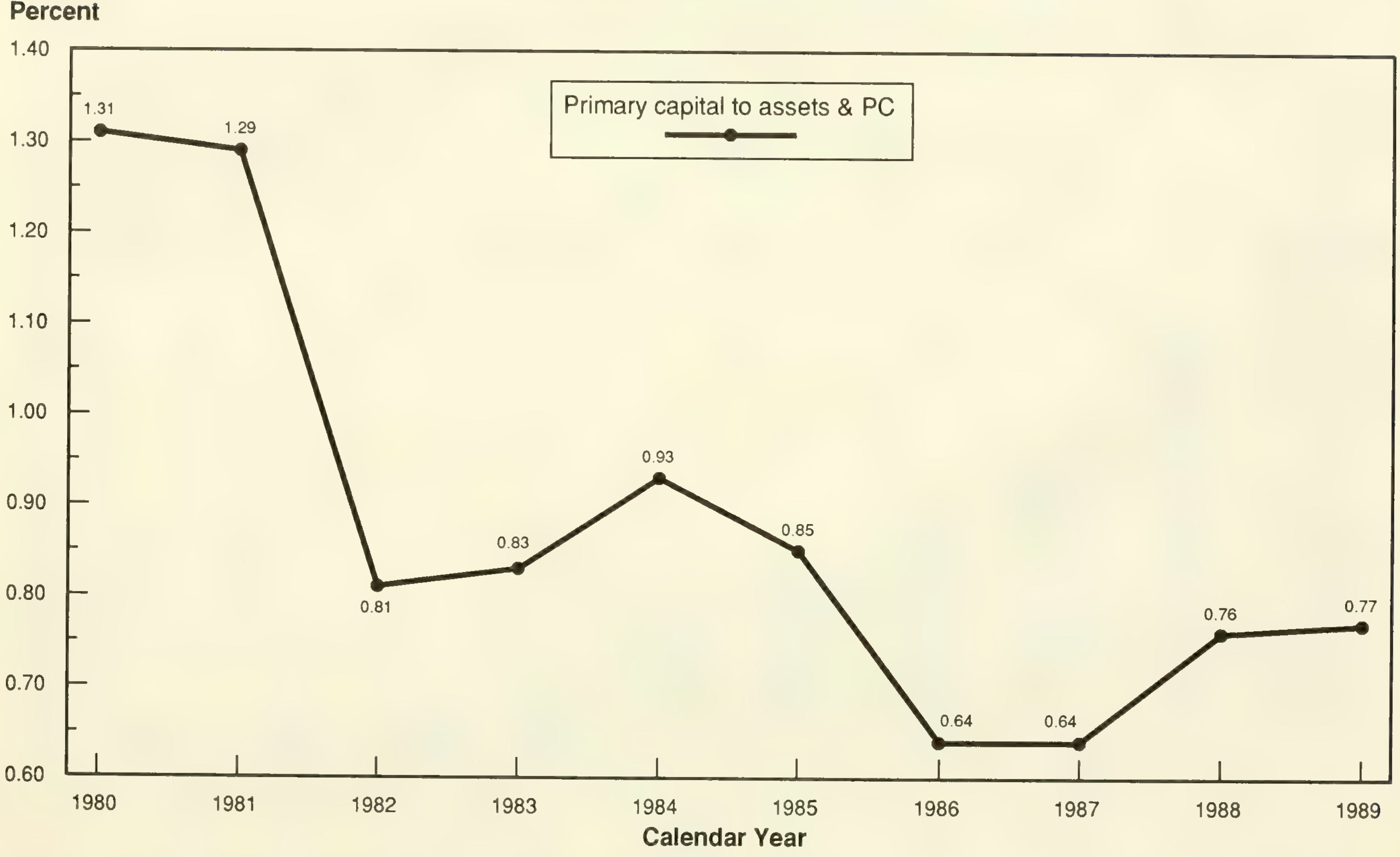
Freddie Mac Growth Rate of Primary Capital vs. Growth Rate of Assets & PC



Source: Treasury calculations based on data supplied by Freddie Mac.

Chart 6

Freddie Mac Primary Capital Ratio



Source: Treasury calculations based on data supplied by Freddie Mac.

Quality and Timeliness of Information

Overview

Freddie Mac makes information available to the public and the Federal Government in a manner consistent with other government-sponsored enterprises. However, Freddie Mac recently began publishing, on a quarterly basis, its mark-to-market balance sheet together with a transition analysis that allows the assessment of how sensitive its market value is to changes in interest rates. In terms of quality of information available to the public in assessing risk, Freddie Mac's market value balance sheet is superior to information provided by Fannie Mae and other GSEs.

Information to the public

Freddie Mac publishes the types of information that stockholder-owned U.S. corporations usually make available to investors. This information includes: (1) annual reports detailing Freddie Mac's audited financial statements and quarterly unaudited statement updates; (2) periodic information statements describing (a) recent events and operating results, (b) new issues of debt, and (c) new MBS; and (3) quarterly investors/analysts reports which provide summary audited and unaudited information concerning Freddie Mac's operations in a historical format. This information is deemed sufficient to adequately inform investors of the general financial condition of Freddie Mac.

Freddie Mac began publishing its mark-to-market balance sheet on a quarterly basis in the third quarter of 1989. While generally accepted accounting practices (GAAP) have not been developed for market value accounting, problems associated with valuing assets at market prices are less severe for Freddie Mac because the majority of its assets are mortgages in which market prices can be accurately determined.

Comparisons over time of mark-to-market balance sheets provide useful information concerning the sensitivity of the market value of Freddie Mac to changes in interest rates. In the case of the savings and loan industry, mark-to-market accounting would have provided an early warning signal to some of the problems facing the industry today.

Information to the Federal Government

Freddie Mac provides information to several agencies of the Federal Government. On a monthly basis, mortgage purchase, commitment, and settlement data are provided to HUD and the Federal Housing Finance Board (a successor to certain responsibilities that were previously a function of FHLBB). Data on MBS and debt outstanding are given to Treasury and the Federal Reserve Board (FRB) on a monthly basis. The FRB receives quarterly balance sheet data for its flow-of-funds division, and OMB receives annual balance sheet data for budgetary purposes. The information given to government agencies and the FRB differs little in content to what is publicly available.

Freddie Mac's reporting requirements to HUD will increase as HUD begins to exercise its new regulatory authority. Officials at HUD have testified that they will adapt to Freddie Mac the analytical capabilities that they currently have to oversee Fannie Mae activities. Presumably HUD will require Freddie Mac to submit information concerning LTV ratios and defaults for its purchased mortgages. This information is not currently available to the public or Federal agencies.

Conclusion and recommendations

Freddie Mac makes information available to the public and the Federal Government in a manner consistent with other GSEs. Freddie Mac has gone one step further, however, by supplying to the public quarterly mark-to-market balance sheet data. This information allows investors and the Federal Government to assess Freddie Mac's exposure to interest rate risk over time. No other GSE does so. Treasury believes that market value reporting can provide a valuable early warning signal to alert the Federal Government and investors of potential future problems.

Treasury's examination of the risks associated with Freddie Mac's operations suggests that additional information concerning the known risk characteristics of mortgages, e.g. LTV ratios, seasoning, etc., should be made available to the Federal Government and the public. This will allow better private sector understanding of Freddie Mac's operations, thereby reducing its ability to take on more risky business at the possible expense of the Federal Government.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to examine the financial safety and soundness of Freddie Mac. Treasury's examination focused on the risks associated with Freddie Mac's operations which might expose the Federal Government to potentially large and unexpected outlays in the unlikely event of Freddie Mac insolvency. Treasury's charge included an examination of Freddie Mac's exposure to business risk, credit risk, interest rate risk, and management and operations risk. Given our assessment of operating risks, Treasury assessed the adequacy of Freddie Mac's capital. Treasury also examined the quality and timeliness of information that Freddie Mac releases to the public and to the Federal Government which would enable outsiders to monitor the financial safety and soundness of Freddie Mac's operations. Our findings are summarized below.

Freddie Mac purchases conventional mortgages in the secondary market, thereby providing additional funds for new mortgages to primary lenders. Its business grew tremendously during the 1980s. At the start of the decade, Freddie Mac had securitized and retained in its investment portfolio over $22 billion in residential mortgages. By the end of 1989, that figure had grown by over 13 times to a whopping $294.7 billion. During this period of rapid growth, Freddie Mac remained profitable, benefitting from strong demand for housing, inflation, and the growth of the mortgage securitization industry.

Slower household formation as a result of the aging of the population is expected to reduce the growth in the residential mortgage market. Combined with an expected slowing in the rate of growth of the securitization of mortgages vis-a-vis the growth of the primary mortgage market, Freddie Mac is expected to experience slower growth in the 1990s than in the 1980s.

An important implication of a slowdown in the growth of the residential mortgage market is that the pace of housing price inflation in the 1990s is expected to be slower than in the 1980s. This would have a direct impact on Freddie Mac's credit risk exposure. Since an increase in homeowner equity reduces the probability of a mortgage defaulting, a slowdown in the pace of housing inflation would reduce the rate at which homeowners' equity builds up, thereby keeping mortgages in higher risk categories for longer periods of time. The result would be that Freddie Mac would need to hold more capital in an environment of slower housing price inflation.

Credit risk is potentially the largest operating risk faced by Freddie Mac. To help control its credit risk exposure, Freddie Mac has developed conservative underwriting standards for mortgages that it purchases. It also has established minimum financial and reporting standards for its seller/servicers as well as private mortgage insurers. Freddie Mac actively monitors for compliance to these standards, with termination of business the ultimate sanction for noncompliance.

Freddie Mac's credit risk exposure was enhanced measurably by the favorable economic environment during the last half of the decade. The large number of mortgages purchased during the housing refinance boom of 1986 and early 1987 are seasoning (a build-up in homeowners' equity which reduces the probability of default), and are providing Freddie Mac with a steady stream of fee income that supplements capital as a buffer to future default losses. Based on the results of its credit stress test, the seasoning of this bulge in business has helped to improve its credit risk exposure to the point where Freddie Mac feels that its current capital level is adequate.

Freddie Mac's exposure to interest rate risk is currently small. A policy of securitizing 95 percent of its mortgage purchases effectively transfers interest rate risk to the holders of the mortgage securities. The remaining 5 percent of mortgages that are not securitized are financed mainly with short-term debt. The apparent exposure to interest rate risk from this maturity mismatch is minimal, however, as the duration gap measuring the sensitivity of its capital to changes in interest rates, is small.

Freddie Mac could increase its exposure to interest rate risk at any time by increasing its debt financing of mortgages. Now that it is a publicly traded company, competitive pressures may in the future force it to implement this type of strategy, since funding mortgages with debt is generally cheaper than securitization, and would result in a higher level of profitability. Given its current capitalization and the balance sheet restrictions imposed on it by the HUD capital requirement of 15 to 1, Freddie Mac could increase its mortgage purchases financed by unsecured debt by roughly 3 times, or to a little over $66 billion. Thus, Freddie Mac could increase its interest rate risk significantly without being required to hold more capital.

Treasury's examination of management and operations risks found that Freddie Mac has controls and systems in place that provide for organized planning, a structure for policy making, control systems reviewed by both internal and external auditors, computerized information systems, and established personnel procedures. Treasury recognized that Freddie Mac was undergoing reorganization at the time of our review, both at the management and board levels. However, issues of concern to Treasury relating to policy making and MIS were discovered. Freddie Mac has recognized its MIS problems and have stated that corrective measures and/or action plans are being implemented to address the MIS concerns.

Freddie Mac makes information available to the public and the Federal Government in a manner consistent with other GSEs.

Freddie Mac has gone one step further, however, by reporting to the public quarterly mark-to-market balance sheet data. This information gives outsiders the ability to assess Freddie Mac's interest rate risk exposure. In Treasury's examination of Freddie Mac's operating risks, we found that publicly available information was not sufficient to adequately assess all of its risk exposures, particularly its credit risk exposure. We therefore recommend that additional risk related measures of performance (e.g., LTV ratios, seasoning, loss severity rates, etc.) be reported to HUD (Fannie Mae has in the past not reported these types of risk related measures to HUD) so that HUD can improve its ability to effectively monitor Freddie Mac's operating risks.

Given our assessment of its operations, Treasury concludes that Freddie Mac's operating risks currently do not present an imminent threat to the Federal Government. However, with its current capital requirement, one that is not based on the riskiness of activities it undertakes as well as not fully addressing its off balance sheet activities, Freddie Mac's operating risks may well present a long-run concern to the Federal Government.

The new financial institution risk-based capital requirements do factor in the off balance sheet contingent liabilities, including PCs issued, into the capital computation. However, there are significant differences between Freddie Mac and financial institutions, which make these risk-based capital requirements in their present form inappropriate for Freddie Mac. Among the significant differences are national diversification, the constraints on the types of business Freddie Mac can enter, and the greater control Freddie Mac has over the liability side of its balance sheet due to its access to the capital markets and to its not being a deposit-taking institution.

A capital requirement that makes conceptual sense for Freddie Mac should be related to the risks undertaken by its operations. It should include measures of interest rate and credit risk on different types of assets, both on and off the balance sheet. It should also recognize the substantial role that the continuous stream of guarantee fee income plays in supplementing capital as a buffer to losses from mortgage defaults.

In addition to an appropriate capital standard, effective financial safety and soundness oversight for Freddie Mac should (1) provide incentives not imposed by the market for the corporation to manage its risks carefully, (2) continually monitor changes in its financial condition as it affects risk exposure, and (3) monitor timely adherence to any capital standards or other regulatory requirements. The Treasury believes that there should be mechanisms in place to perform these functions for GSEs. In particular, with respect to Freddie Mac, recent legislative changes resulting in a new constituency of stockholders primarily concerned about profitability, may result in pressure on Freddie Mac's management to undertake more risk. Consequently, effective financial safety and soundness oversight for Freddie Mac would counteract this pressure for greater risk taking.

ENDNOTES

1. Freddie Mac buys and sells its mortgage-backed securities through a retail trading group. This group helps to make a market in Freddie Mac securities by standing ready to buy and sell Freddie Mac securities for current or forward delivery. The average mortgage-backed trading volume in 1989 was about $8 billion per month.

2. Material supplied to the Treasury by the Federal National Mortgage Association for the purposes of the GSE study.

3. See Federal Home Loan Mortgage Corporation annual reports for 1988 and 1989.

4. See N. Gregory Mankiw and David N. Weil, The Baby Boom, The Baby Bust, and the Housing Market, National Bureau of Economic Research, Working Paper # 2794, December 1988.

5. In addition to the mortgage-related exposure, Freddie Mac's non-mortgage investment portfolio totaled $5.3 billion, and included investments in Federal Funds, municipal securities, and equities. For these assets, however, Freddie Mac has little credit risk, since they are largely comprised of high quality instruments.

6. Recent research by economists at Freddie Mac suggests that a nationally diversified portfolio of mortgages would require significantly less capital than a nondiversified mortgage portfolio. While the exact magnitude of the reduction in capital needs is difficult to estimate, senior management at Freddie Mac believe that geographic diversification can reduce capital needs from between 33 to 50 percent compared to holding mortgages concentrated in one area. (See Quigley, John M., and Robert Van Order, "Defaults on Mortgage Obligations and Capital Requirements for U.S. Savings Institutions: A Policy Perspective", Working Paper, October 1989)

   It is important to note, however, that the benefits from geographic diversification might disappear during a national economic crisis such as a depression. If all regions of the country are equally hard hit, the benefits to geographical diversification disappear.

7. Material supplied to Treasury by the Federal Home Loan Mortgage Corporation for purposes of the study.

8. Federal Home Loan Mortgage Corporation, Supplement dated February 16, 1990 to Information Statement dated March 31, 1989, p.11.

9. Opponents of market value accounting argue that estimating the market value of a firm can require a large element of subjectivity. Typically, relatively few assets and liabilities of a firm are traded in the market in the exact form in which a firm holds them. Thus a firm must convert the market price of a traded security to a price for its own asset or liability, using some type of interpolation or "bridge" to make the conversion. Many assets and liabilities of a firm do not have market prices at all. Here, the element of subjectivity is even greater, since different methodologies for estimating market values for nontraded assets and liabilities can produce significantly different results.

   The application of market value accounting to Freddie Mac's balance sheet, however, is more straight forward than for most financial institutions. Market prices are available for the bulk of Freddie Mac's assets, which are mortgages, and its debt securities are publicly traded. Treasury believes that market value accounting is a valuable tool that can be used to help assess interest rate risk. It is not useful as a measure of capital for the reasons cited above. (See Analysis of Capital.)

10. Dividing standard Macaulay duration by one plus the periodic yield produces a statistic called modified duration. Modified duration is a measure of the price elasticity of a security to changes in the yield.

11. See "Measuring and Managing Interest Rate Risk: A Guide to Asset/Liability Models Used in Banks and Thrifts," Alden L. Toevs and William C. Haney, p.256-350, in Robert B. Platt, Controlling Interest Rate Risk: New Techniques & Applications for Money Management, 1986.

12. In order to effectively insulate against interest rate risk in different interest rate environments, it is necessary to match the duration and convexity of assets and liabilities. If you do not match convexity, then a change in interest rates results in a mismatch in duration even though durations were matched before the interest rate shift. The term "duration drift" is used to describe the widening of the duration gap when interest rates change. The concept of convexity can be used to more fully describe this phenomena.

    The relationship between changes in interest rates and the value of an asset (or liability) is not linear but curved. The relationship is represented by a parabola that is convex to the origin. That is, when interest rates are low, a given change in yield will have a relatively larger impact on the price of the security than when interest rates are high. The degree to which the impact on price of a given change in yield varies is determined by the degree of convexity of the parabola. Thus, dissimilarities in the degree of convexity of the relationship between interest rates and prices accounts for diverging behavior of the durations among assets and liabilities at differing levels of interest rates.

13. Equity capital corresponds to Tier 1 capital under the bank and thrift capital rules.

14. Supplemental capital corresponds to Tier 2 capital under the bank and thrift capital rules, except that subordinated debt has not been discounted for remaining term to maturity.

15. Total capital is equity capital with the addition of subordinated debt and loan loss reserves.

16. Freddie Mac commissioned a Price Waterhouse study on its capital adequacy (Report on Assessment of Freddie Mac's Capital Adequacy, February 5, 1990). That report stated that Freddie Mac was able "...to meet the thrift industry capital standards, as modified by us to reflect Freddie Mac's interest rate and portfolio risk and geographical dispersion..." (p. V-17). The problem with this statement is that it may lead a reader to an erroneous conclusion. The modifications are so substantial that the rule is no longer the thrift risk-based capital rule. For example, one change to the thrift capital rules the Price Waterhouse study made was to measure Freddie Mac's capital on a marked-to-market basis, rather than GAAP.

17. For purposes of this study, the transition percentages provided in the OTS rule for subordinated debt issued before November 7, 1989, are not used.

18. The minimum necessary increases in total capital shown on Tables 21 and 22 are less than the total capital shortfall, because as Tier 1 capital is increased, the amount of allowable subordinated debt and Tier 2 capital increases. In other words, amounts that are currently held but disallowed at present capitalization become allowable if equity is increased. Also, the maximum amounts of subordinated debt increase that can be counted as capital under the commercial bank capital rules shown on the tables are based on the minimum required increases in equity capital.

19. Price Waterhouse, Report on Assessment of Freddie Mac's Capital Adequacy, February 5, 1990.

ADDENDUM

FREDDIE MAC'S STRESS TEST

Overview

Freddie Mac's stress test is designed to simulate the impact on its capital from projections of expected defaults, prepayments and losses for its purchased mortgages under adverse economic conditions. Freddie Mac chooses a Moody's type credit stress scenario as a benchmark for determining the adequacy of its capital. Our analysis of Freddie Mac's credit stress test involves an assessment of: (1) its ability to reasonably measure Freddie Mac's credit risk exposure from its current book of business, and (2) the appropriateness of Freddie Mac using a stress test for determining the level of capital necessary to protect the Federal Government from excessive risk exposure.

Credit stress scenario

Freddie Mac defines its credit stress scenario as the economic conditions, as described by Moody's, that might occur during a period like the Great Depression. Moody's macroeconomic depression scenario has home prices falling by 10 percent per year for four straight years, and interest rates falling by a cumulative 500 basis points over four years, and both rising slowly thereafter. The exact scenario is as follows:

Year	Mean % Change in Housing Prices	Short-term Int. Rate	Mortgage Rate
1990	0.0%	8.0%	10.0%
1991	-10.0	7.0	8.5
1992	-10.0	6.0	7.5
1993	-10.0	4.0	6.25
1994	-10.0	3.0	5.0
1995	0.0	3.0	5.0
1996	1.5	3.0	5.0
1997	3.0	4.0	6.0
1998	3.0	4.0	6.0
1999	3.0	5.0	7.0

Freddie Mac suffers losses during its stress test for three main reasons: (1) home prices decline causing borrower equity to fall, thereby causing mortgages to default; (2) lower interest rates mean more prepayments and thus less fee income; and (3) lower interest rates mean less float income.

At the end of 1989, Freddie Mac had $2.4 billion in primary capital (equity plus loan loss reserves) to support over $295 billion in mortgages. Given this amount of leverage, Freddie Mac survived its stress test for 10.5 years. As one part of its criteria for rating a mortgage insurance firm AAA, Moody's requires a firm to survive its stress test, which differs from Freddie Mac's own version, for 10 years.

Behavior of home prices

Freddie Mac takes Moody's specification for the change in housing prices over the depression scenario and converts it into data on each individual property's value. This is done by assuming a stochastic process for each property's value, in which all properties have the same expected price change (Moody's housing price scenario), but actual annual price changes for each individual property differ according to an assumed distribution about the mean.

Before Freddie Mac runs its stress test, the current amount of equity in each of the mortgages in its portfolio is estimated. A mortgage's original LTV is adjusted by changes in a housing price index over time, using the same stochastic process described above. (See Table 12 in Federal Home Loan Mortgage Corporation case study for its estimated mark-to-market LTV distribution of purchased mortgages at the end of 1989.)

To project changes in homeowner equity, Freddie Mac uses the C-27 (Commerce Dept.) constant quality price index for multifamily and ARMs, and estimates its own housing price series (using a weighted repeat sales method calculated with price data taken from Freddie Mac's own portfolio) for 30- and 15-year single-family mortgages. The method for calculating their house price index is taken from Case and Shiller.[1]

Behavioral models of default and prepayment

Freddie Mac's stress test incorporates econometric models of mortgage default and prepayment to simulate borrower behavior under adverse economic conditions. The models attempt to predict behavior outside of the range of experience used to estimate the parameters of the behavioral default and prepayment equations. Therefore, borrowers may react differently under a stress scenario, such as a depression, than what Freddie Mac's default and prepayment models project. This criticism, however, would be true for any stress scenario that lies outside the range of Freddie Mac's experience.

Default models. Freddie Mac has developed empirical models, following an options pricing approach, to estimate default behavior for single-family mortgages and multifamily mortgages. The default model for single-family mortgages is based upon research from Foster and Van Order, which models default as a function of the amount of owner's equity (market value of property less loan amount) in the property.[2] Foster and Van Order's research assigns default probabilities for three ranges of homeowners' equity. Property in which equity exceeds 10 percent of the house value appears to have effectively a zero chance of default. The critical equity ranges in which mortgages are most likely to default are between -10 percent and +10 percent, and when equity is below -10 percent.

The default model for multifamily mortgages is much simpler than that for single-family mortgages. Freddie Mac assumes that the multifamily borrower responds differently to an owner's financial position in a property than a single-family borrower. The critical variables determining default on multifamily mortgages are equity and tax liability. Default is assumed to occur when a borrower has experienced two consecutive years when equity (market value of property less remaining loan amount) remains below the implied tax liability. (In the event of default, the remaining loan amount less depreciated value of property represents a capital gain for income tax purposes.)

Freddie Mac does not have separate default models for ARMs or 15-year single-family fixed-rate (SFFR) mortgages.[3] Instead, it projects defaults for these instruments using its single-family default model.

Prepayment models. Prepayments for single-family mortgages are calculated from a model developed by Foster and Van Order for FHA mortgages.[4] The model estimates prepayment as a function of equity and current mortgage rates relative to coupon rates on existing mortgages. The model is reestimated using actual Freddie Mac data for conventional single-family mortgages from 1981 through 1986.

Prepayments for multifamily mortgages are estimated using the same model as for single-family mortgages. The parameters of the model, however, are reestimated using Ginnie Mae multifamily mortgage-backed security prepayment rates from 1985-1986.

Freddie Mac does not have separate models for predicting prepayments on ARMs and 15-year SFFR mortgages. Prepayment rates for these mortgages are estimated from the prepayment model for single-family mortgages.

Financial assumptions underlying the stress model

Freddie Mac ties the output of its behavioral models of default and prepayment to pro forma financial statements. This enables management to assess how defaults and prepayments affect its capital position over time. Defaults and prepayments translate into losses via assumptions on (1) MI recovery, (2) the average time before a defaulted mortgage goes into foreclosure, (3) the REO holding period, and (4) transactions costs associated with selling the property. Values for these variables are taken from Freddie Mac's recent experience.

Private mortgage insurance (MI). Freddie Mac requires MI or other forms of credit enhancement specified in its charter on all mortgages with LTVs above 80 percent. MI, used on over 80 percent of Freddie Mac's high LTV purchases, acts as a buffer by reducing Freddie Mac's loss rate on mortgage defaults. In the stress test, private mortgage insurers are assumed to remain in business only as long as predicted by their Moody's rating. An insurer with an A rating will last 5 years, with a AA rating 7 years, and with a AAA rating 10 years. In addition, Freddie Mac assumes that its exposure to individual insurers is identical to the insurer's market share in the mortgage insurance market.[5] Freddie Mac uses an overall average recovery rate from its experience over the last three years.

Time between default and foreclosure. Freddie Mac considers a mortgage to have defaulted after it has been delinquent for more than 90 days. Freddie Mac will initiate foreclosure proceedings immediately thereafter, however differences in State foreclosure laws will often delay the proceedings for several more months. In the meantime, Freddie Mac is obligated to pass through interest rate payments on the defaulted mortgages to holders of its PCs. For purposes of the stress test, Freddie Mac uses its national average time period before a property goes into foreclosure. This period is largely predetermined by the various state laws.

Holding period for REO. Once Freddie Mac obtains possession of a foreclosed property, it resells the property to recoup part of its loss. REO property is often located in depressed markets and therefore can remain on the market for a significant amount of time before the property is resold. For the stress test, Freddie Mac uses the average holding period from its recent experience in the disposition of REO property.

Transactions costs. Freddie Mac incurs transactions costs in the process of REO disposition. These costs include fix-up costs, selling costs, and all other costs associated with disposition. In the stress test, Freddie Mac assumes a level of costs equal to the average of its recent experience with transactions costs.

Additional assumptions used in the model

No new business. Freddie Mac's stress test assumes no new business is undertaken. Freddie Mac survives only on the credit quality of its current book of business.

No dividends. Freddie Mac's stress test assumes no dividends are paid out.

No recourse. Freddie Mac assumes no benefit from recourse because it is assumed that servicers to which Freddie Mac has recourse agreements have gone bust in a Depression. Freddie Mac currently has recourse on a little over 6 percent of its entire portfolio with LTVs over 80 percent. This figure is considerably less than Fannie Mae's recourse.

Administrative costs. Administrative expenses are assumed to decline in relationship to the amount of business on its books.

Tax carryback. Freddie Mac's model includes a 2 year loss carryback for tax purposes which provided a tax refund in the fourth and fifth years. The refund from the carryback was added to each year's capital level. The extra capital from the tax refund was assumed not to earn interest income.

Assessment of Freddie Mac's stress model

Accuracy of default models. To test the accuracy of Freddie Mac's default models, comparisons were made between model projections and Freddie Mac's actual default experience for the years 1986 through 1989. For the single-family default model, three additional tests comparing the output of the model with: (1) Freddie Mac's recent experience in Texas, (2) Fannie Mae's recent experience in Texas, and (3) Standard and Poors' Great Depression default assumptions, were examined.

Review of the these tests results in the following conclusions:

(1) Freddie Mac's single-family default model adequately predicts defaults within the range of its recent experience. Single-family mortgages comprise about 70 percent of Freddie Mac's outstanding year-end 1989 portfolio (both sold and retained).

(2) The multifamily default, while unable to track defaults as well as the single-family model, is adequate for purposes of a stress test. The model is conservative in that it overpredicted defaults in all four years. Multifamily mortgages comprise about 4 percent of its year end 1989 portfolio.

(3) The single-family default model does not predict ARM defaults very well. It underpredicted defaults during the first three years and overpredicted defaults in 1989.[6] Although ARMs comprise about 8 percent of its year-end 1989 portfolio, Freddie Mac's volume of ARM purchases nearly doubled in 1989. A more accurate default model for ARMs should be developed and used in the stress test.[7,8]

(4) We cannot draw a conclusion on the accuracy of predicting defaults for its 15-year single-family mortgages. Actual default experience for these

mortgages was not provided to Treasury, so that comparisons with the model's projections could not be made. At the time of our inquiry, Freddie Mac had not made such a comparison.[9] Fifteen-year fixed-rate mortgages account for about 14 percent of its end of year 1989 mortgage portfolio.

Accuracy of prepayment models. To test the accuracy of its prepayment models, projections for prepayments for the years 1986 through 1989 for each model were compared to Freddie Mac's actual prepayment experience. Treasury's analysis of these tests, made with an understanding of the difficulty in precisely modeling prepayment behavior, lead to the following conclusions.

(1) The single-family prepayment model adequately predicts prepayments within the range of Freddie Mac's recent experience.

(2) The multifamily prepayment model adequately predicts prepayments within the range of Freddie Mac's recent experience.

(3) For ARMs, the model for single-family prepayments consistently underpredicted prepayment rates, and by significant amounts. For purposes of a stress test, a prepayment model that underpredicts benefits Freddie Mac. The single-family model also does not do an adequate job of predicting prepayments for 15-yr SFFR mortgages. Since ARMs represent a growing portion of the portfolio, and 15-yr SFFR mortgages already comprise a significant portion, more accurate models should be developed and used in the stress test.

Sensitivity of the stress test to changes in underlying assumptions. In our analysis of Freddie Mac's stress test, we examined the sensitivity of the model's year end 1989 results to reasonable changes in the assumptions for: (1) housing inflation prior to the start of the depression scenario, (2) transactions costs, (3) MI recovery rate, (4) REO holding period, (5) prepayment rates, and (6) defaults.[10] For each of the tests, we examined Freddie Mac's ability to survive for at least 10 years.

The main reason Freddie Mac survives its stress test for at least 10 years is that, adjusted for house price increases, the mean LTV distribution of its purchased mortgages is very low. (The estimated average LTV ratio is about 55 percent.) Even though house prices decline a cumulative 34 percent during the first 5 years of the depression, generating cumulative default rates on single-family 80 percent LTV loans of about 16 percent, only a little over 6 percent of Freddie Mac's single-family loans default during the 10 years of the scenario, since lower LTV loans default less frequently than higher LTV loans. This enables Freddie Mac to maintain a high level of guarantee fee income over the depression scenario. Guarantee fee income supplements capital as a buffer to default losses.

Freddie Mac's methodology of adjusting LTV ratios to reflect housing inflation appears to be fairly accurate, especially viewed in light of the model's ability to project single-family fixed-rate default rates using the adjusted LTV data that closely track Freddie Mac's recent experience. However, to see how sensitive the results of the stress test are to LTV house price adjustments, Freddie Mac was asked to run its model assuming reductions in house price increases of 1 and 2 percentage points for each year prior to the depression. This effectively raises the LTV distribution of its purchased mortgages. For the 1 percent reduction case, Freddie Mac continues to survive the full 10 years. For the 2 percentage point case (a change which Treasury feels is not reasonable given the accuracy of default predictions), however, Freddie Mac would have required about an additional $850 million in capital (about 38 percent more) to survive a full 10 years.[11] It is clear from this example that the pace of housing inflation plays an important role in determining the amount of capital needed to survive a full 10 years in the stress test.

The results of the stress test are not significantly affected by changes in some of its assumptions, but for reasonable changes in others, Freddie Mac would require more capital. For example, the results of the stress test are fairly insensitive to changes in the REO holding period, but are much more sensitive to changes in transactions costs. Overall, our analysis found that anywhere from zero to up to $300 million of additional capital could be required to last the full 10 years. If more than one assumption were altered, which in a stressful environment might be likely, the impact on Freddie Mac's capital requirements would be compounded.

Appropriateness of other assumptions. The impact of the assumption of no new business on the results of the stress test is unclear. Freddie Mac argues that this is a conservative assumption since it could be booking profitable new business during the early years of a depression, thereby increasing their fee income which could be used to offset default losses. The credit quality of this new business, however, would be questionable. Business booked during a depression probably would be riskier and therefore be more likely to default. The default losses from this new business might offset the benefits of additional fee income, if Freddie Mac were unable to quickly recognize and price for this additional risk. Since Freddie Mac would be required by its charter to continue purchasing mortgages even in a depression, it should investigate the impact of assuming new, but riskier, business on the results of the stress test.

The assumption that recourse is no good is conservative. While some institutions might fail during a depression, others will not. The assumption of no dividends, however, is not conservative. This assumption implies that Freddie Mac will know immediately when the depression starts. Dividend payments for the first couple of years would significantly impact Freddie Mac's ability to survive the full 10 years with its current leverage. A more realistic assumption would have Freddie Mac paying dividends for the first couple of years during the scenario until it realized that a depression was underway.

Assessment of Freddie Mac's stress test and its role in determining capital adequacy.

Freddie Mac's stress test is a good management tool for helping to assess the credit risk exposure of its current book of business. While improvements in the behavioral models for adjustable-rate and 15-year SFFR mortgages are needed, especially since ARMs are a growing portion of the portfolio, the impact of any errors are currently not large due to the relatively small size of ARM and 15-year mortgage holdings.

Despite its usefulness as a management tool, a stress test by itself is not adequate for determining capital adequacy. Our examination of the sensitivity of the results of the stress test found that individual changes in some of the underlying assumptions would require Freddie Mac to hold more capital. Since Freddie Mac uses recent experience as a guide in assigning values to important parameters of the model, it would not be unreasonable to assume that more than one parameter value might change in a stressful environment. If this occurred, the impact on Freddie Mac's capital requirements would be compounded.

Stress tests involve the use of behavioral models for default and prepayment whose parameter estimates are based on recent, or "normal", conditions. A truly stressful economic scenario would encompass changes in behavioral relationships that would not be known in advance. Under stressful conditions Freddie Mac would have to price products with different and unknown risk characteristics. There would be a learning curve, and possibly a steep one, to adapt to the new environment. Freddie Mac's public mission to support the housing finance market would mandate it to keep up its activity in a stressful economic environment, even under increased operating uncertainties.

Aside from the shortcomings of a stress test modeling process, another important inadequacy of a stress test in determining capital adequacy is that it does not measure management and operations risk. This type of risk exposure can be very high in stressful periods. If Freddie Mac were to get in trouble, a belief in an implicit Federal guarantee would provide incentives for management to make excessive bets on interest rate movements which could put the viability of the corporation at risk.

ENDNOTES TO ADDENDUM

1. Case, Karl E., and Robert J Shiller, "Prices of Single Family Homes Since 1970: New Indexes for Four Cities, Working Paper # 2393," Cambridge: NBER, September 1987.

2. Foster, C., and R. Van Order, "An Option-Based Model of Mortgage Default", Housing Finance Review 3(4), 1984, pp. 351-377.

3. While Freddie Mac uses the same default model for 15- and 30-year mortgages, the model distinguishes by years to maturity. Hence, no distinction is made between a new 15-year mortgage and a 15-year 30-year mortgage (with identical LTVs), but a new 15-year mortgage and a new 30-year mortgage will have different default rates.

4. Foster, C., and R. Van Order, "FHA Terminations: A Prelude to Rational Mortgage Pricing", AREUEA Journal 13(3), 1985, pp. 273-291.

5. Currently, Freddie Mac does not have the capability to determine its actual exposure to individual mortgage insurers. However, Freddie Mac is in the process of modifying its reporting systems so that in the future it could identify MI exposure by institution.

6. For purposes of a stress test, economists at Freddie Mac feel that their model adequately predicts defaults on ARMs because falling interest rates reduce payment shock which is one of the primary causes of ARM defaults.

7. Economists at Freddie Mac indicated that they do not have a sufficient amount of historical data to permit them at this time to develop and estimate separate default models for adjustable-rate and 15-year single-family fixed-rate mortgages. They argue, however, that theoretically a default model such as their single-family model should be able to predict defaults for these instruments as well, since default is primarily a function of equity in the property.

8. Price Waterhouse (Report on Assessment of Freddie Mac's Capital Adequacy, February 5, 1990) comes to the same conclusion with respect to the ARM default and prepayment models.

9. Freddie Mac economists indicated that they had not conducted a comparison test for 15-year fixed rate mortgages (as of 3/14/90). However, they expressed confidence that their model predicts defaults for these instruments reasonably well.

10. Since Freddie Mac has not experienced an environment such as the Great Depression, what constitutes a reasonable adjustment to a parameter is a matter of judgement. For purposes of our analysis, Treasury used as a starting point the sensitivity analysis that was utilized by Price Waterhouse in its evaluation of Freddie Mac's stress test. Where in Treasury's judgement this analysis was incomplete, Freddie Mac was asked to perform additional sensitivity tests.

11. The additional amount of capital needed to survive for a full ten years is calculated by discounting back 10 years, using a discount factor of 4.7 percent (the straight average of short-term rates over the depression), the capital deficiency at the end of the 10th year.

APPENDIX C

FEDERAL HOME LOAN BANKS

DESCRIPTION

Creation and Purpose

The Federal Home Loan Bank System (Bank System), which was established by the Federal Home Loan Bank Act of 1932 (Bank Act),[1] was a response to the Great Depression. As a result of 1,700 thrift failures, President Hoover proposed a central credit facility for home mortgage lenders to ensure the availability of home financing.

The Bank Act authorized the creation of twelve regional Federal Home Loan Banks (Banks) to extend credit to savings and other home financing institutions and established the Federal Home Loan Bank Board (Bank Board) to oversee the Banks. The twelve Banks are now located in Boston, New York, Pittsburgh, Atlanta, Cincinnati, Indianapolis, Chicago, Des Moines, Dallas, Topeka, San Francisco, and Seattle.

The Banks, which are wholly-owned by their members, make both short-term and long-term advances (collateralized loans) to their members. The primary source of funding for the Banks is the sale of consolidated obligations in the capital markets.

Significant modifications to the Federal Home Loan Bank Act. The Home Owners' Loan Act of 1933[2] guaranteed a membership for the Banks, by requiring all federal savings associations to become members of a Bank. The National Housing Act of 1934[3] established the Federal Savings and Loan Insurance Corporation (FSLIC), which generally required state-chartered savings associations to become members of a Bank as a condition of insurance. However, many state-chartered thrifts became members of the Bank System prior to the establishment of the FSLIC.

During the late 1980's a significant number of thrifts became insolvent and the FSLIC did not have the resources to meet the insurance obligation on deposits. The Federal Government, when drafting legislation to provide the necessary funds, decided that the thrift industry's contribution to the cost of resolving the thrift industry's problems should come, in part, from the Bank System's existing retained earnings.

The Competitive Equality Banking Act of 1987[4] (CEBA) established the Financing Corporation (FICO) with the purpose of recapitalizing the FSLIC and the Financial Institutions Reform, Recovery, and Enforcement Act of 1989[5] (FIRREA) established REFCORP for funding the losses of insolvent thrifts resolved by the newly-created Resolution Trust Corporation (RTC). The Banks were required by these two pieces of legislation to contribute most of their retained earnings as of December 31, 1988, and a portion of their future earnings to help capitalize FICO and REFCORP. In addition, FIRREA required the Banks to establish and fund an Affordable Housing Program.

CEBA also gave the Banks a statutory priority interest above that of non-perfected security lienholders (including conservatorships and receiverships) in the collateral of a borrowing member. This provided additional assurance that a Bank would receive its collateral in the event that a borrower failed.

FIRREA made major changes to the Bank Act. FIRREA dismantled the Bank Board and established a new independent agency, the Federal Housing Finance Board (FHFB), to oversee the Banks. The statute transferred all thrift examination and supervisory personnel from the Bank System to a new office within the Treasury, the Office of Thrift Supervision (OTS). (These personnel had been transferred from the Bank Board to the Bank System in 1985.) As a result, the Banks will no longer subsidize the cost of regulating the thrift industry, which was over $100 million a year. A new thrift insurance fund, the Savings Association Insurance Fund (SAIF), was created and the assets and liabilities of the FSLIC were generally transferred to the new FSLIC Resolution Fund. Management of the thrift insurance funds was transferred to the Federal Deposit Insurance Corporation (FDIC). The statute also expanded the category of institutions eligible to become members of the Banks to include both commercial banks and credit unions with at least 10 percent of their assets in home mortgages.

Organization

Each Bank is governed by a board of at least 14 directors, consisting of both industry-elected and federally-appointed representatives. The FHFB annually designates each board's chairman and vice-chairman. The Bank's member institutions elect 8 directors and the FHFB appoints 6 directors. The elected members must outnumber the appointed members by a ratio of four to three. The appointed directors serve four year terms, compared with two years for the elected directors. Under FIRREA, individuals who are officers or directors of undercapitalized member institutions may not serve as directors of a Bank.

The Banks have an Office of Finance, which serves as a fiscal agent for the Bank System and issues debt on behalf of the FHFB. The Office's director is responsible to the FHFB, as well as to the twelve Bank presidents.

Financial Structure

The principal sources of funds used in the Banks' operations are the proceeds from the sale of consolidated debt obligations, interest on advances, member deposits, and the issuance of Bank capital stock.

Consolidated obligations. The Banks raise funds primarily through the sale of consolidated debt obligations in the capital markets. These obligations are the "joint and several obligations" of all the Banks, so each Bank is not only legally responsible for repayment of its own participation in a debt issue, but also for repayment of all the Banks' consolidated obligations. As Table 1 indicates, as of year-end 1989, the Banks had approximately $137 billion in consolidated debt outstanding (including $700 million passed through to Freddie Mac).

By regulation, the Bank System's outstanding consolidated obligations are limited to 12 times the aggregate capital of the Banks. In addition, the Banks are required to maintain assets free from any lien or pledge in an amount equal to their outstanding consolidated obligations. The regulation provides that, in order for this restriction to be modified or relaxed, the Banks must retire or provide for payment of all outstanding obligations.[6]

The Banks offer several types of fixed income securities. Consolidated bonds constitute the largest portion of their debt. They are generally offered monthly. Maturities of the bonds usually range from one to ten years. At year-end 1989, the Banks had about $120 billion in bonds outstanding.

In addition, the Banks sell and issue consolidated discount notes to provide short-term funds for seasonal and cyclical fluctuations in savings flows and mortgage financing. The notes also serve as a source of funds for variable rate advances. These securities have maturities from 30 days to one year and are sold daily. As of year-end 1989, the Banks had approximately $16 billion in notes outstanding.

The Office of Finance places the consolidated bonds through a network of primary securities dealers and banks, who then market the obligations to commercial banks, credit unions, pension funds, money managers, and other institutional investors. Discount notes are only available for direct purchase through a group of eight securities dealers.

Deposits. Deposits by member thrifts are the Banks' second largest source of funds. As of December 31, 1989, the Bank System had approximately $26 billion in member deposits, on which they pay a market rate of interest. In general, the Banks offer the following four categories of accounts: (1) demand deposits; (2) overnight deposits, which pay a rate of interest similar to

Table 1
Federal Home Loan Banks
Selected Financial Data

($ millions, year-end)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Assets										
Cash & Investments	4,632	8,552	12,933	10,397	18,712	20,108	20,054	18,132	18,530	35,195
Advances	48,963	65,194	66,000	58,978	74,616	88,835	108,664	133,057	152,781	141,797
Other Assets	752	934	1,329	3,115	3,665	3,112	2,961	2,988	3,533	3,258
Total Assets	54,347	74,680	80,262	72,490	96,993	112,055	131,679	154,177	174,844	180,250
Liabilities										
Deposits	10,074	11,913	14,732	11,873	18,844	23,309	26,952	20,355	19,031	25,897
Consolidated Debt*	37,268	54,131	55,967	48,931	65,085	74,460	89,590	116,386	136,513	136,086
Other Liabilities	976	1,836	2,149	3,952	4,360	4,305	3,329	3,691	3,780	4,070
Total Liabilities	48,318	67,880	72,848	64,756	88,289	102,074	119,871	140,432	159,324	166,053
Capital										
Stock	5,160	5,827	6,269	6,394	7,200	8,313	9,485	11,281	13,177	13,385
Retained Earnings**	869	974	1,144	1,340	1,504	1,792	2,323	2,463	2,342	811
Total Capital	6,029	6,801	7,413	7,734	8,704	10,105	11,808	13,744	15,519	14,196
Selected Operating Ratios										
Capital to Assets Ratio	11.1%	9.1%	9.2%	10.7%	9.0%	9.0%	9.0%	8.9%	8.9%	7.9%
Return on Average Assets	0.83%	0.83%	1.24%	0.96%	1.04%	1.04%	1.21%	0.93%	0.88%	1.01%
Return on Equity***	6.90%	7.87%	12.98%	9.45%	10.14%	10.72%	12.38%	9.66%	9.37%	12.66%

*Less pass-throughs to Freddie Mac.

**Less contributions to FICO and REFCORP.

***Equity from beginning of year.

Source: Bank System Annual Reports.

Table 2
Federal Home Loan Banks
Selected Income Statement Information

($ thousands)

For the years ended Dec. 31:	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Interest Income										
Interest & fees on advances	4,480,967	6,994,211	8,701,842	6,754,428	7,515,787	8,690,244	9,042,272	9,876,160	11,727,689	14,411,464
Income from investments	622,097	942,212	1,266,801	1,257,151	1,378,344	1,478,757	1,518,916	1,314,297	1,629,890	2,498,260
Interest on loans to FSLIC	—	—	—	—	—	59,099	62,945	60,827	67,918	75,049
Interest & fees on AID loans	7,074	7,263	7,145	7,000	6,839	6,700	6,542	6,367	6,100	5,897
Earned commitment fees	28,513	35,976	42,254	34,593	32,990	29,774	46,185	32,226	19,970	26,167
Total Interest Income	5,138,651	7,979,662	10,018,042	8,053,172	8,933,960	10,264,574	10,676,860	11,289,877	13,451,567	17,016,837
Interest Expense										
Interest & Concessions on COs	3,377,456	5,673,774	7,396,538	6,207,276	6,727,179	7,640,071	7,776,111	8,548,273	10,206,112	12,998,047
Interest on deposits	1,289,519	1,685,841	1,597,429	1,381,987	1,331,381	1,492,097	1,617,338	1,388,471	1,565,879	1,849,265
Other interest	1,357	11,460	16,677	7,426	29,806	57,278	50,556	49,204	53,180	45,678
Total Interest Expense	4,668,332	7,371,075	9,010,644	7,596,689	8,088,366	9,189,446	9,444,005	9,985,948	11,825,171	14,892,990
Net Interest Income	470,319	608,587	1,007,398	456,483	845,594	1,075,128	1,232,855	1,303,929	1,626,396	2,123,847
Net Interest Margin	0.93%	0.94%	1.30%	0.60%	1.00%	1.03%	1.02%	0.91%	0.99%	1.20%
Net Income										
Total Interest Income	5,138,651	7,979,662	10,018,042	8,053,172	8,933,960	10,264,574	10,676,860	11,289,877	13,451,567	17,016,837
Total Non-Interest Income	15,467	19,525	65,599	414,838	1,747,512	416,898	615,116	435,873	352,079	274,973
Total Income	5,154,118	7,999,187	10,083,641	8,468,010	9,360,750	10,681,472	11,291,976	11,725,750	13,803,646	17,316,082
Total Interest Expense	4,668,332	7,371,075	9,010,644	7,596,689	8,088,366	9,189,446	9,444,005	9,985,948	11,825,171	14,892,990
Total Non-Interest Expense	69,185	92,850	110,893	140,035	1,509,840	408,760	385,701	411,469	524,552	626,251
Total Expenses*	4,737,517	7,463,925	9,121,537	7,736,724	8,477,895	9,598,206	9,829,706	10,397,417	12,349,723	15,519,241
Net Income	416,601	535,262	962,104	731,286	882,855	1,083,266	1,462,270	1,328,333	1,453,923	1,796,841

Note: 1989 data is unaudited.

*Includes gains/losses from extraordinary items such as early retirement of debt.

Source: Federal Home Loan Bank System Annual Reports.

federal funds; (3) term deposits of up to 18 months; and (4) special series deposits which are used to matchfund certain advances with deposits.

Stock. Every institution that belongs to the Bank System must purchase stock, which is not traded on a secondary market and is redeemable at par value ($100 per share), unless the FHFB determines that a Bank's paid-in capital is or might be impaired. In this case, the FHFB may order the Bank to withhold from any payment in retirement of stock the pro rata share of such impairment.[7] The amount of stock a member is required to purchase is based on the amount of its holdings of home mortgages and the amount of its borrowing from its Bank. As of December 31, 1989, the Banks had over $13 billion in capital stock, of which 88 percent was required by virtue of mortgage assets or advances and the remainder was available for redemption.[8]

Business activities

The Banks' primary activity is making short and long term collateralized advances to member institutions. In addition, the Banks issue letters of credit, engage in interest rate swaps to assist members in their asset-liability management, and offer various correspondent banking services. The Banks also maintain fixed-income investment portfolios and are active participants in the federal funds market.

Advances and commitments. Collateralized advances to member institutions represent the largest category of the Banks' assets. As of December 31, 1989, combined advances totaled almost $142 billion, or about 80 percent of total assets. (See Table 1.) Under FIRREA, each advance must be secured by one of four types of eligible collateral: home mortgages, government securities, deposits in a Bank, and a limited amount of other real estate. (The statute provided a transition period for the new collateral requirements.)

Advances to a member are limited by legislation to 20 times the capital stock that an institution holds in its Bank. (Stock purchase requirements are greater for members that do not hold a certain percentage of their portfolio in mortgage-related or other qualifying assets.) A member's letters of credit, and the Bank's interest rate swap exposure to the member are included in this ratio.

The Bank Act, as amended by FIRREA, provides that short-term advances may be used for any sound business purpose; long-term advances may be used only for the purpose of providing funds for housing finance. The statute also provides that the Banks, upon the request of the OTS, may make short-term liquidity advances to a savings association that is solvent but presents a supervisory concern because of its poor financial condition and that has reasonable prospects of returning to a satisfactory financial condition. Any such loan is subject to all applicable collateral requirements and shall be at an interest rate no less favorable than those rates for similar short-term liquidity advances to savings associations that do not present such supervisory concern.

Each Bank develops its own policies for making advances, within FHFB guidelines. The FHFB advances policy sets maturity, pricing, and risk management guidelines. The Banks generally price advances within a range, determined by the FHFB, above the estimated cost of raising new consolidated obligations of comparable maturities, as provided daily by the Office of Finance. Other pricing factors, which vary by Bank, may include funding constraints, interest rate risk, the cost of hedging, and the profitability of the Bank.

The Banks also make commitments for advances to member institutions. As of December 31, 1989, there were approximately $5 billion in commitments outstanding.

Affordable Housing Program. By statute, the Banks are required to establish Affordable Housing Programs pursuant to regulations promulgated by the FHFB. FIRREA requires that the Banks subsidize the interest rate on advances to members engaged in lending for long term, low- and moderate-income housing. In addition, the regulations promulgated by the FHFB do not preclude other methods for promoting affordable housing. The Bank System must annually make the following contributions to the program: from 1990-1993, 5 percent of the preceding year's adjusted net income, but not less than $50 million; in 1994, 6 percent of adjusted net income, but not less than $75 million; and in 1995 and thereafter, 10 percent of adjusted net income, but not less than $100 million. The Banks are expected to pay approximately $80 million in 1990.

In addition to the Affordable Housing Programs, FIRREA directs the Banks to establish Community Investment Programs to provide funding for members to engage in community-oriented mortgage lending. Community-oriented mortgage lending involves loans to finance the purchase or rehabilitation of homes by low- and moderate-income households. Advances provided under this program shall be priced at the Banks' cost of funds.

Letters of credit. The Banks issue and confirm standby letters of credit on behalf of member institutions. The letters of credit are collateralized to the same extent and in the same manner as advances. There were approximately $4 billion in letters of credit outstanding at year-end 1989, all of which count against a member's credit limits.

The Banks' letters of credit provide credit enhancement for member thrifts engaged in the following transactions: interest rate swaps, issuance of commercial paper and medium term notes, holding public deposits, or other transactions that assist the asset-liability management of member institutions and that promote home financing or housing activity.[9]

Interest rate swaps. The Banks also offer member institutions interest rate swap programs as asset-liability management tools. As of December 31, 1989, the Banks had $5.6 billion in outstanding swaps with member institutions. The Banks also engage in swaps to assist in their own asset-liability management (discussed in the interest rate risk section). The Banks' total swap activity as of year-end 1989 was about $38 billion.

Reserves and investments. The Banks held over $35 billion in cash and investments at year-end 1989.[10] About $30 billion of these funds were invested in overnight federal funds, which are highly liquid. The Banks are required by statute to maintain investments equal to current deposits received from members, which totalled approximately $25 billion as of year-end 1989. Each Bank manages its own securities portfolio, which contains approximately 80 percent of its investments. The Banks' also maintain a Consolidated Securities Fund, which contains the remaining 20 percent of their investments.

Under the Bank Act, each Bank must retain 20 percent of its net earnings until reserves equal paid-in capital, and retain 5 percent of net earnings thereafter. FIRREA provided that after January 1, 1992, in lieu of the current statutory requirement, each Bank may carry a reserve account as determined by its board of directors.

Other activities. The Banks provide services related to their deposit taking activities, including the purchase, sale and safekeeping of securities on behalf of their members. Also, most Banks provide eligible institutions with certain check collection, processing, and settlement services.

Relationship to the Federal Government

The Banks are subject to the Government Corporation Control Act, which requires the Secretary of the Treasury to approve the offering conditions of Bank obligations, including amount, price, maturity, and interest rate. The Banks' consolidated obligations are exempt from registration under the Securities Act of 1933 and are treated as government securities for the purposes of the Securities Exchange Act of 1934. The Act also directs the General Accounting Office (GAO) to audit the Bank System at least once every three years. The last GAO audit was in 1987.

Consolidated obligations issued by the Banks are eligible:

as security for public monies of the U.S. government; for investment by commercial banks, savings banks, insurance companies, trustees, and other fiduciaries under many state laws; as collateral for Treasury tax and loan accounts; and as collateral for advances at the discount window of the Federal Reserve System.

The tax status of the Banks' obligations is comparable to that of U.S. government securities. Interest on these securities is exempt from state and local tax, but is subject to federal income, gift, and estate taxation. The Banks are exempt from federal and state taxes, but not from local real estate taxes.

The Secretary of the Treasury has the discretionary authority by legislation to lend up to $4 billion to the Banks by purchasing consolidated obligations. This borrowing authority may not be used unless the Secretary of the Treasury and the Chairperson of the FHFB certify that (1) alternative means cannot be effectively employed to permit Bank System members to continue to supply reasonable amounts of funds to the mortgage market; and (2) the ability to supply such funds is substantially impaired because of monetary stringency and a high level of interest rates.[11]

The Federal Reserve Banks and their district branches are authorized to act as depositories and fiscal agents to the Banks. They also maintain accounts for the Banks' book-entry securities and make principal and interest payable through any member of the Federal Reserve System.

Finally, FIRREA provides that the Banks, at the request of the FDIC, may make loans to the FDIC for the use of SAIF. Any such loan shall bear a rate of interest not less than the Bank's current marginal cost of funds, taking into account the maturities involved, and shall be adequately secured.

Regulation and oversight

The newly-created FHFB which is an independent agency within the Executive Branch and has a five member board, has regulatory authority and oversight responsibility for the actions of the Banks. The FHFB's duties are: (1) to supervise the Banks; (2) to ensure that the Banks carry out their housing finance mission; (3) to ensure that the Banks remain adequately capitalized and able to raise funds in the capital markets; and (4) to ensure that the Banks operate in a safe and sound manner. In addition, the Bank Act provides that the regulator shall at least annually require examinations and reports of all the Banks.[12] FIRREA also provides that the FHFB has the authority to suspend or remove for cause a director, officer, employee or agent of any Bank or joint office.[13]

In the past, the Banks have generally operated within broad policy guidelines set by their previous regulator, the Bank Board, which allowed them to adopt more conservative, but not more liberal, guidelines to implement the regulator's policies. The Bank Board's oversight generally consisted of reviewing each Bank's internal audit and annual external audit and monitoring the Banks' monthly financial statements and their compliance with Bank Board policies. The Bank Board also authorized the Banks' debt offerings.

Since the FHFB is a new organization, it is not clear how it will oversee the Bank System. As of mid-April 1990, the FHFB had only one board member, the Secretary of Housing and Urban Development (HUD), who serves as an ex officio member. By statute, until at least 2 directors are appointed and confirmed, the Secretary of HUD shall act with the full powers of the Board of Directors.

The FHFB has repromulgated as its own the Bank Board's regulations pertaining to the Banks. These regulations and policies remain in effect until the FHFB establishes new ones. In addition, the FHFB has promulgated new regulations implementing the Affordable Housing Program mandated by FIRREA and interim membership application procedures for permitting commercial banks and credit unions to join the Bank System.

The FHFB expects to begin examining the Banks in the near future. It has established a division of Bank Oversight and Supervision, which will focus on the safety and soundness of the Banks and their compliance with regulation and law. In addition to this regulatory oversight, the FHFB approves the quarterly dividend payments by the Banks to member institutions, which is one way to monitor capital adequacy.

As the Bank Board did, the FHFB receives the minutes of the Banks' monthly board meetings and approves each Bank's annual budget. It also appoints the public interest directors and supervises the election of directors. Applications for Bank membership are approved by the FHFB.

FINANCIAL SAFETY AND SOUNDNESS OF THE FEDERAL HOME LOAN BANKS

In order to assess the financial safety and soundness of the Banks, the degree of risk involved in the Banks' operations due to such factors as business risk, credit risk, interest rate risk, and management and operations risk, as well as the Banks' capital, were examined. In addition, the quality and timeliness of information currently available to the Federal Government and the public concerning the Banks' operations and the financial risks associated with such operations were assessed. The results of these analyses follow.

Business Risk

Overview

The Bank System's major business challenge over the next few years will be handling the problems associated with a declining membership and a declining demand for advances due to the necessary contraction of the thrift industry. FIRREA broadened the Bank System's potential membership base; however, the Bank System will have to actively market advances in order to increase the borrowing of its current membership as well as to attract new members. Although the Banks could also develop other financial services to increase revenues, we encourage them to focus on increasing their lending activity rather than incur additional risks associated with alternative investments.

Membership

As of March 31, 1990, there were approximately 3,164 members of the Bank System. All federally-chartered thrifts, which totalled 1,781 as of March 31, 1990, are required by statute to be members of the Bank System. In addition, the FSLIC generally required state-chartered thrifts to join the Bank System as a condition of insurance.

It is unclear at this time if the FDIC, which manages SAIF, will continue requiring Bank membership for state-chartered thrifts. A state-chartered thrift in Wisconsin, that joined the Bank System prior to obtaining FSLIC insurance, has informed the FDIC of its intention to withdraw from the Bank of Chicago. The institution has requested that the FDIC rule that membership in the Bank System is not a necessary condition of deposit insurance for state-chartered thrifts. Two other state-chartered members of the Bank of Chicago have also petitioned to leave.[14] As of March 31, 1990, 1,085 SAIF-insured state-chartered thrifts were members of the Bank System.

Table 3
Capital Stock and Advance Holdings Among the Major Categories of Members of the Bank System

As of March 31, 1990
($ millions)

	District:	Boston	New York	Pitts-burgh	Atlanta	Cin-cinnati	Indiana	Chicago	Des Moines	Dallas	Topeka	San Francisco	Seattle	Total
SAIF-Insured	Number	27	118	93	148	136	16	135	66	158	48	116	24	1,085
State-Chartered	Capital Stock	$16.1	207.5	107.4	282.5	171.1	5.7	144.0	97.3	431.2	152.4	685.8	43.6	2,344.6
SAIF-Insured	Number	62	110	88	435	199	132	174	108	221	103	80	69	1,781
Federally-Chartered	Capital Stock	$197.3	647.5	222.5	1,122.0	360.2	468.3	420.3	301.1	1,169.0	478.0	2,303.3	507.9	8,197.4
BIF-Insured	Number	225	37	7	1	--	1	--	--	--	--	--	8	279
	Capital Stock	$662.2	543.5	55.5	0.8	--	0.7	--	--	--	--	--	92.3	1,355.0
Non-Federally	Number	--	3	8	--	2	--	--	1	--	--	--	--	14
Insured	Capital Stock	--	$5.4	0.2	--	0.2	--	--	0.1	--	--	--	--	5.9
Insurance	Number	--	--	--	--	--	5	--	--	--	--	--	--	5
Companies	Capital Stock	--	--	--	--	--	$1.2	--	--	--	--	--	--	1.2
Total	Number	314	268	196	584	337	154	309	175	379	151	196	101	3,164
	Capital Stock	$875.6	1,403.9	385.6	1,405.3	531.5	475.9	564.3	398.5	1,600.2	630.4	2,989.1	643.8	11,904.1
Advance	Number	224	130	93	335	122	69	112	81	221	94	113	74	1,668
Holders	Capital Stock	$793.8	1,184.9	282.2	1,178.5	334.7	419.4	389.4	349.7	1,439.2	556.2	2,793.9	609.1	10,331.0
	Advances	$9,962.1	14,476.3	3,494.6	14,211.4	3,089.4	6,601.4	2,560.4	3,756.5	19,949.1	6,887.3	36,570.5	11,194.9	132,753.9

Note: All data as of March 31,1990, with the exception of District 12 advances and capital stock which is as of February 28, 1990.
Data from District 4 does not include an insurance company that withdrew from membership on April 13, 1990 and redeemed $7.8 million in capital stock.

Source: Federal Housing Finance Board.

Membership is optional for state-chartered savings banks insured by the Bank Insurance Fund (BIF) (279 members), insurance companies (5 members), and non-federally insured thrifts (14 members). As shown in Table 3, the BIF-insured savings banks are concentrated in Boston and New York and to a lesser degree in Pittsburgh and Seattle. For example, over 70% of the Bank of Boston's membership consists of BIF-insured savings banks.

There is a possibility that those voluntary members that are attracted more by the high dividend yields on their stock investments in the Banks than by the availability of advances at competitive rates could leave the Bank System. This is more likely to happen if dividends decrease from their current high rate of return due to a decline in net earnings. Based on a non-weighted average, the Banks' dividend yields in 1989 ranged from a high of 13.7 percent to a low of 8.6 percent. The median dividend yield was 11.4 percent. However, as Table 3 indicates, BIF-insured institutions hold a relatively large amount of capital stock, suggesting that they have a significant volume of advances outstanding. Thus, many of these voluntary members may be members primarily for the access to advances rather than the high dividend yields.

Membership in the Bank System is expected to decline as the RTC resolves insolvent thrifts. As of April 6, 1990 there were 351 thrifts in conservatorship and additional institutions may fail. The actual decline in membership as a result of the resolution of these institutions will depend in part on the number of institutions that are liquidated, that are acquired by thrifts, or that do not remain in the Bank System after being purchased by commercial banks. Any decline in membership could be partially offset if eligible commercial banks and credit unions join the Bank System, as they now have the option to do.

FIRREA's membership provisions. FIRREA broadened the Bank System's potential membership base by allowing commercial banks and credit unions with at least 10 percent of their assets in home mortgages to join the Bank System. Currently, members generally are required to hold stock equal to the greater of 1 percent of their mortgage-related assets, .3 percent of total assets, or 5 percent of outstanding advances.

With respect to the 1 percent requirement, members upon joining a Bank must at a minimum purchase stock as if at least 30 percent of their assets are mortgage-related -- i.e. they must purchase stock equal to the greater of .3 percent of total assets or 1 percent of mortgage assets.

Institutions that do not meet the Qualified Test Lender (QTL) test, which currently requires thrifts to hold 60 percent of their portfolio in mortgage-related assets and other qualifying assets and 70 percent after July 1, 1991, must hold a higher level of capital stock against advances than members that are qualified thrift lenders.[15] (Certain state-chartered savings banks are exempted from both these requirements.)

In some cases, these statutory requirements may make it more expensive for an institution to borrow from the Bank System than from another source of credit, which may discourage voluntary membership in the Bank System. For example, if a Bank is paying dividends that are not competitive with alternative investments, the additional required investment in capital stock could make it too costly for an institution with less than 30 percent of its portfolio in mortgage-related assets to borrow from a Bank. To the extent that these provisions reduce the number of eligible borrowers, they also reduce the Bank System's potential earnings.

Potential effect of industry shrinkage on Bank earnings

The Banks have in the past been very profitable institutions. As Table 1 shows, their net income rose from $1 billion in 1985 to $1.8 billion in 1989, an increase of 65 percent. This growth in earnings was due, in part, to the increase in short-term advances (generally at market rates) to insolvent savings and loans that FSLIC did not have the funds to close. However, the large volume of advances which helped contribute to the Banks' record earnings have begun to decline and could decline further.

From March 31, 1989 to March 31, 1990, outstanding advances decreased by about 20 percent. It should be noted that Bank System advances peaked near March 1989. Net income for the first quarter of 1990 was approximately $370 million, or $1.5 billion on an annualized basis. If the trend indicated by unaudited statistics continues, the Bank System's earnings in 1990 will be below the historically high $1.8 billion earned in 1989.

Of the Banks' $142 billion in advances at year-end 1989, about $21 billion were to thrifts in conservatorship and an additional $15 billion were to institutions deemed likely by the OTS to be placed in conservatorship.[16] Many of these advances will be paid off when the institutions are resolved or in some cases, if the RTC considers the advances high cost funds, when the thrifts are placed in conservatorship.

In addition, many solvent thrifts are voluntarily shrinking their balance sheets to meet the new capital requirements mandated by FIRREA and do not need their current level of advances. These factors, which are strengthening the thrift industry, may at least in the short run, reduce the Banks' earnings, unless they successfully market advances to existing and new members.

Legislative changes

CEBA and FIRREA created two funding mechanisms, FICO and REFCORP, respectively, that are mixed ownership government corporations and that operate in a similar manner. These two entities have been capitalized by the Banks' earnings.

FICO. FICO's sole purpose is to function as a financing vehicle to provide up to $10.8 billion for the FSLIC Resolution Fund. The Banks' investments in FICO's non-voting capital stock are used to purchase zero coupon bonds, which at maturity will cover the principal repayment of the FICO bonds.[17] FICO has issued to date $8.17 billion in bonds and it is unclear at this time whether additional FICO bonds will be issued.

REFCORP. FIRREA provided $50 billion through a combination of REFCORP bonds, Bank retained earnings as of December 31, 1988, and Treasury appropriations to cover the losses of failed thrifts. REFCORP may issue up to $30 billion in bonds, backed by zero coupon Treasury securities. FIRREA directs the Banks to pay $2.1 billion in retained earnings plus $300 million annually toward principal and interest on the REFCORP bonds. REFCORP had issued $13 billion in bonds through April 1990.

Capital Contributions to FICO and REFCORP. As of December 31, 1989, the Banks had contributed approximately $2.4 billion to FICO and REFCORP.[18] Of this, $680 million was used to purchase FICO capital stock, $485 million defeased principal on REFCORP bonds, and $1.2 billion went to the RTC.

Assuming the Banks would have been able to earn an 8 percent return on their $2.1 billion in retained earnings as of year-end 1988 that are being contributed to FICO and REFCORP, they will forgo about $168 million in annual interest income.

FIRREA also requires additional contributions to promote the affordable housing programs of their member institutions. The statute provides that the FHFB may temporarily suspend a Bank's payment to the Affordable Housing Program if a Bank finds, and the FHFB agrees, that the payments are contributing to the Bank's financial instability. In determining financial instability, the FHFB shall consider whether (1) the Bank's earnings are severely depressed; (2) there has been a substantial decline in the Bank's capital; and (3) there has been a substantial reduction in advances outstanding.

The Administration proposed and Congress strongly supported the REFCORP provisions in FIRREA as a way for the thrift industry, which is the primary stockholder in the Bank System, to accept some of the cost of resolving insolvent institutions. Industry contributions were deemed appropriate since the thrift industry will benefit directly from any future earnings that result from the use of taxpayer funds to help return the industry to a healthy position.

FIRREA also ameliorated the impact of FICO and REFCORP on the Bank System by: (1) providing that, after December 31, 1991, each Bank no longer has to place a certain percentage of earnings in legal reserves (in 1989, the Bank System contributed 20 percent of net earnings, approximately $360 million, to legal reserves); and (2) reducing the Bank System's operating expenses by eliminating its role as examiner for the industry. The Banks had subsidized these examinations by over $100 million a year.

Industry competition

Collateralized advances to member institutions represented about 80 percent of Bank System's total assets as of year-end 1989. Each Bank develops its own pricing policy for advances based on several factors, including interest rate risk and the profitability of the Bank. The FHFB provides for a minimum and maximum mark-up for advances. For advances with maturities greater than six months, the minimum mark-up is 20 basis points over the Banks' cost of funds. The maximum mark-ups range from 120 basis points for advances with maturities greater than six months to 1 year, to 60 basis points for advances with maturities greater than 9 years. There is not a minimum or maximum mark-up for advances with maturities of six months or less. Advances with interest rate caps, collars, or floors are exempt from the pricing requirements and a Bank may reprice an adjustable rate advance outside of the schedule as well.

Depending on a number of different factors, including the current market rate of interest, a Bank's mark-up on an advance, the amount of collateralization required for an advance, and the dividend paid on a Bank's stock, a Bank's short-term advances may or may not be competitive with alternative short-term funds available to member institutions, e.g. repurchase agreements, which also require collateral. The Banks do, however, provide a specialized service to smaller institutions that have difficulty accessing the capital markets. The Banks' longer-term advances, in part due to the lower mark-up over the Banks' cost of funds, are generally competitive with alternative sources of funds.

However, the Banks currently are lending funds to only about 53 percent of their members. (See Table 3.) As of March 31, 1990, about 1,668 members, holding 87 percent of the capital stock, held outstanding advances. The lending appears to be highly concentrated with 20 percent of all members accounting for over 50 percent of all outstanding advances.

The amount that members borrow from the Bank System varies considerably by district. The percentage of SAIF-insured members in each district that do not currently hold Bank advances ranges from 4 percent to 37 percent. In three districts, over 30 percent of the SAIF-insured members either do not borrow or fund a relatively small share (2 percent) of their portfolios with advances.

Since all SAIF-insured institutions currently are members of a Bank, the Bank System does not have to compete for all of its membership. This could change if the FDIC determines that state-chartered thrifts do not have to retain membership in a Bank. The possibility of such action is an incentive for the Banks to keep operating costs low and provide advances at competitive rates. The strategic plans for most of the Banks include marketing programs promoting their advances and other services to attract voluntary members.

Regulatory changes

Before August 9, 1991, the FHFB is required to establish the criteria member institutions must meet if they are to continue to have access to long-term advances. The statute mandates that access to the Bank advances be dependent upon a determination that the member is meeting the needs of low- and moderate-income borrowers. Factors to be considered include the member's record under the Community Reinvestment Act of 1977 (CRA), and the member's record of lending to first time homebuyers. The standards of community investment or service adopted by the FHFB will have a significant effect on the ability of the Banks to attract voluntary members and to prevent the decline of the Bank System's membership.

Geographic concentration

With only one regional Bank for each district, each Bank has one hundred percent of the Bank services market share in its particular district. The size of the Banks vary considerably; the four largest Banks hold more than 60 percent of the Bank System's assets; the four smallest Banks account for approximately 14 percent of the Bank System's assets.

As of year-end 1989, the Bank of San Francisco was the largest bank with over $43 billion in assets, followed by the Bank of Dallas with $31 billion, Bank of Atlanta with $22 billion, and Bank of New York with about $18 billion in assets. At the other end of the spectrum, four Banks (Pittsburgh, Cincinnati, Chicago, and Des Moines) had assets of about $7 billion or less.

Due to the restricted area of their operations, the Banks do not have the benefit of broad loan diversification and are exposed to the economic conditions in their local areas. For example, the net income and capital levels of Banks in districts with a large number of failing and failed thrifts could decline significantly as these thrifts are resolved. Growth in certain Banks also may be limited, in part, by relatively low demand for advances in their particular district.

Conclusions and Recommendations

At least in the short-term, the contraction in the thrift industry will most likely result in a decline in the current membership in the Bank System and a reduction in demand for advances. This, when added to the required contributions to REFCORP and the Affordable Housing Program, could in turn mean lower earnings available for dividends. Although earnings may decline from their current high level, this appears to be a transition period for the Banks in which they are adjusting to a changing business environment.

It is unclear at this time how far membership might decline, even if the FDIC were to make membership voluntary for state-chartered savings and loans. There are several reasons for members to remain in the Bank System, aside from the dividend payments. First, membership assures an institution that it can readily obtain funds to meet liquidity needs. Second, for smaller members that cannot access the markets, Bank advances provide a stable form of shorter term funding. In addition, the Banks offer longer term advances at attractive rates. In addition, under FIRREA, once an institution withdraws from the Bank System it cannot return as a member for ten years.

If, over the longer term, the Banks are to avoid shrinking along with the industry, the Bank System must replace failed thrifts and any voluntary members who withdraw. Furthermore, the Banks must actively market their products to the members who currently are not borrowing from the Banks. According to the business plans of most of the Banks, they are now aggressively marketing the benefits of membership.

Credit Risk

Overview

The Banks have been successful in minimizing their credit risk as demonstrated by the fact that they have never suffered a loss on an advance. The Banks protect against credit risk through credit underwriting and conservative collateral requirements, both in terms of the quality and amount of collateral required for an advance. The degree to which a Bank depends on collateral for credit protection varies across the Bank System. Some Banks rely primarily on an institution's creditworthiness and expected ability to repay when deciding whether to make an advance. Other Banks will lend to troubled institutions and therefore rely more heavily on the collateral securing the advance as a protection against credit risk.

Underwriting Standards

The Banks generally look at some or all of the following financial criteria when evaluating the creditworthiness of a borrower: capital, asset quality, liquidity, interest rate risk, profitability, trends in operating ratios, and amount and maturity of all borrowings including Bank advances. Each Bank has generally established limits on the amount of advances it will make to a member as a percentage of a borrower's total assets. These limits typically range from 25 percent to 50 percent of a member's assets. The Banks generally have also placed limits on total borrowings by a member, which includes non-Bank borrowings. These limits vary considerably by Bank, and include 125 percent of capital, 30 to 40 percent of assets, and determination on a case by case basis.

FIRREA directs the regulators of federally-insured financial institutions to make available to the FHFB and the Banks financial information reports filed by Bank System members. In addition, members must consent to examinations by the FHFB or the Banks and must agree to furnish the Banks with reports by state and federal examiners.

Collateral Policies

The Banks also protect against loss through the over collateralization of advances. FIRREA assures that the Banks collateralize their advances with high quality assets that have a low credit risk. The legislation established that the following assets could serve as collateral for Bank advances: (1) fully disbursed, whole first mortgages, not more than 90 days delinquent, or securities representing a whole interest in such mortgages; (2) securities issued or guaranteed by the U.S.

Government or agency thereof, including without limitation mortgage-backed securities issued by Freddie Mac, Fannie Mae, or Ginnie Mae; (3) deposits of a Federal Home Loan Bank; or (4) other real estate-related collateral acceptable to the Bank if such collateral has a readily ascertainable value and a Bank can perfect its interest in the collateral. The aggregate amount of outstanding advances secured by other real estate collateral may not exceed 30 percent of a borrower's capital.

The statute provided a transition period for the new collateral requirements. If an advance existing on the date of enactment matures and the borrower does not have sufficient, eligible collateral to secure the advance under the new collateral requirements, the Bank may renew the advance secured by such collateral as the Bank and the FHFB deem appropriate. A member that has an advance secured by insufficient eligible collateral must reduce its level of outstanding advances promptly and prudently in accordance with a schedule determined by the FHFB. FIRREA effectively tightened the Banks' collateral requirements since it abolished the authority of the Banks' regulator to determine acceptable collateral for advances. The Bank Board had allowed the Banks to make advances secured by any asset with an ascertainable value and in which a security interest could be perfected.

Each Bank, through its Board of Directors, develops its own credit policy within the statutory requirements. The level of collateralization, which is the amount of the collateral required and the degree to which the Bank perfects its interest in the collateral, depends on a borrower's financial position and the type of collateral. As a borrower's overall financial condition deteriorates, the terms and conditions of the loan become more stringent. The least stringent collateral requirement generally is blanket lien status, the most stringent is delivery status. (One Bank does not take a blanket lien on collateral but requires a specific itemization of pledged collateral.)

The Bank Board in 1982, at the request of the Bank presidents, endorsed guidelines for minimum standards for assignments of, and perfecting security interests in, collateral for advances. These guidelines, the product of an agreement between the Bank presidents, are neither a regulation nor a formal policy statement, but they did receive the regulator's approval. These guidelines outline minimum collateral requirements that the Banks have agreed to follow; many Banks have instituted more stringent policies.

(1) Blanket Status. Those members with a specified level of capital and that meet credit underwriting criteria as determined by their Bank are generally subject to the blanket lien agreement, with the exception of the Bank that does not take blanket liens. Borrowers in this status can encumber or dispose of any collateral as long as the remaining amount is sufficient to meet the Bank's collateral requirements. The minimum capital requirement for blanket lien status varies across the Bank System, from three percent regulatory capital to liabilities to five percent tangible capital to assets.

(2) Listing. A member in listing status is required to specifically assign and segregate the specific collateral securing the advance. In the case of default, the Bank's position is more secure than under blanket status because it has assigned specific assets. The Banks have agreed, at a minimum, to place less well-capitalized borrowers (those with a capital to liabilities ratio of less than three percent; or those with a capital ratio less than four percent and total borrowings of more than 25 percent of assets) in listing status. Specific levels established by the individual Banks for listing status vary considerably -- from the minimum three percent capital to liability ratio to all borrowers in listing status-- and also may depend on other measures of financial condition.

(3) Delivery. A member in delivery status is required to physically deliver the collateral to the Bank. Delivery of collateral results in the Bank having a physically perfected security interest in the collateral. Under the Bank System's guidelines, a Bank must require delivery of collateral if the member's regulatory capital to liabilities ratio is less than two percent, or if the Bank believes it would only be secure with delivery of the collateral. Actual guidelines established by the Banks range widely from the minimum to a four percent tangible capital to assets ratio.

The amount of collateral required for an advance generally depends on a member's collateral status and the type of collateral being pledged. In addition, the par value of a member's capital stock in the Bank also acts as security for its advances, providing at least a five percent capital reserve.

The Banks require members under blanket status to provide collateral with a book value equal to 100 percent to 175 percent of an advance. (The median is 170 percent.) The 100 percent collateral requirement generally applies to advances secured by Bank deposits. Those borrowers in listing and delivery status generally must provide collateral with a market value equal to at least 125 percent of outstanding advances if the value of the collateral is determined quarterly, or 110 percent if determined monthly.

Swap Counterparty Risk

An additional form of credit risk is counterparty risk in a swap transaction. An interest rate swap is an agreement between two parties to exchange a stream of interest payments on an amount of funds (notional principal) for an agreed-on period of time. Each party to a swap is trying to match interest it receives on assets to interest it pays on liabilities. Typically, one party agrees to make floating-rate payments tied to a specific index, and the other party agrees to make fixed-rate payments set at the inception of the swap. The Banks engage in swaps to facilitate their own asset-liability management and to assist members with their interest rate risk management.

Swaps provide protection against interest rate risk, but there is the risk of counterparty default on the payment of interest. In the case of counterparty default, the amount of the notional principal is not at risk. However, there is the potential for an economic loss, increased interest rate risk, or opportunity cost, if a party engages in a new swap and the interest rate is not as favorable as in the previous swap. The Banks have never suffered a loss from a swap.

FHFB policies attempt to protect the Banks from counterparty risk and its requirements generally appear to be more stringent than those applicable for national banks and thrifts. As with advances, individual Banks may adopt more stringent policies than those required by the FHFB. In swaps with members, the Banks are required to maintain collateral equal to the market value of the swap or three percent of the notional principal. Swaps are collateralized in the same manner as advances. In addition, members are generally required to be on the side of the swap making fixed rate payments.

The FHFB limits swaps with nonmembers to parties it believes provide a minimum of counterparty risk. Eligible nonmember counterparties include U.S. government sponsored agencies or the following institutions: a domestic or foreign commercial bank rated at least "B" by Keefe Bruyette and Woods; a domestic or foreign corporation, or a foreign government or agency with unsecured debt rated at least "A" by Standard and Poors or Moody's; or a dealer that reports its position daily to the Federal Reserve. The majority of nonmember swaps are with dealers. The FHFB's guidelines provide that if the counterparty does not meet these criteria, the obligation must be adequately secured in the judgement of the Bank. Currently all the Banks' nonmember swap parties meet the regulator's criteria.

Each Bank's risk exposure to uncollateralized nonmember counterparties is limited to 100 percent of its net worth, and risk exposure to a single nonmember counterparty is limited to 25 percent of the Bank's net worth. The risk exposure is calculated as either three percent of notional principal or the market value of the swap.

Advances to thrifts in conservatorships

The Bank System now has credit exposure to a number of failing and failed thrifts. Of the Banks' $142 billion in advances as of year-end 1989, about $21 billion were to thrifts in conservatorship. The Banks had an additional $15 billion in advances to institutions deemed likely by the OTS to be placed in conservatorship. It should be noted that some Banks will not lend to insolvent thrifts.

In the past, the FSLIC, which along with the Banks reported to the Bank Board, generally repaid advances in cash when the institutions were resolved. With FIRREA, the responsibility for resolving insolvent thrifts was transferred from the Bank Board to RTC, which has also repaid Bank advances in cash.

Conclusions and recommendations

The Banks clearly have done an excellent job at minimizing credit risk, as demonstrated by the fact that they have never suffered a loss on an advance nor have they had to liquidate collateral due to a borrower's default. The Banks successfully protect against credit risk through a combination of well-developed credit policies that provide credit underwriting standards and collateral requirements.

The Banks recognize and manage the risk of lending to less well-capitalized thrifts by requiring more stringent terms and conditions on these advances. With the overcollateralization of advances, there would have to be a large drop in property values for the Banks to incur a loss in the case of liquidation. For example, if collateral is valued at 170 percent of book value (the median requirement under a blanket lien agreement), the value of all of a member's collateral, which could include mortgage-backed and Treasury securities, would have to fall by more than 40 percent. The statute ensures that the quality of the collateral securing advances, letters of credit, and member swaps will remain strong.

Similarly, the Banks' swap policies have been effective in minimizing counterparty risk. However, the Banks' have only been using swaps for the past 6 years so their credit experience in this area is more limited than it is for advances.

The one area of potential credit risk is the exposure of some of the Banks to troubled and failed thrifts. If a borrower defaulted on an advance, or if the insurer put back collateral rather than paying off an advance in cash, the Bank would have to liquidate, and perhaps service, the assets securing the advance.

While no Bank has ever had to liquidate collateral to pay off an advance, those Banks that face this possibility should have contingency plans for disposing of collateral.

Furthermore, Banks liquidating assets in a depressed market could potentially have difficulty recovering all of their funds, even though the advances are overcollateralized. In particular, Banks that have outstanding advances secured with non-standard collateral that does not meet FIRREA's fully phased-in requirements, but are permissible under the transition rules, could potentially incur losses in the case of liquidation.

It is not clear how much risk the loans to troubled thrifts actually pose to these Banks. Because the Banks have not incurred losses in the past and their credit policies appear to protect against future losses, their external auditors have not required the Banks to establish loan loss reserves. However, the FHFB should examine each Bank's potential exposure to loss and consider the benefits of establishing a modest loan loss reserve.

Interest Rate Risk

Overview

Interest rate risk occurs when the value of a financial institution's assets and liabilities react differently to changes in interest rates. The Banks are exposed to interest rate risk through their primary activity of making advances to financial institutions, which are funded through borrowings in the capital markets.

Overall, the Banks have been very effective at controlling their interest rate risk, which is demonstrated in the consistency of the Bank System's net interest margin (net interest income divided by earning assets) during periods of fluctuating interest rates.

Asset-liability management

Each Bank develops its own asset-liability management strategy, but, as with credit operations, the Banks operate within fairly broad parameters set by the FHFB. All the Banks have asset-liability management committees comprised of senior officials that set policy for controlling interest rate risk. Each Bank has developed formal hedging and swap policies and they are required to file swap and hedging reports with the FHFB. Bank officials also report regularly on swap and hedging activity to their board of directors. Generally, however, the Banks' regulator has not required them to report regularly on their overall management of interest rate risk, nor are they required to use uniform methods of analysis. As a result, the level of sophistication in asset-liability management varies among the institutions.

Maturity match funding

The Banks' primary method for controlling interest rate risk is maturity match funding of assets and liabilities. With maturity match funding, the Banks attempt to structure their balance sheets so that assets and liabilities reprice at the same time. Therefore, a change in interest rates would affect both sides of the balance sheet by approximately the same amount.

The Banks attempt to match long-term fixed rate advances with consolidated bonds and medium-term notes of similar maturities. Short-term fixed rate advances are matched with short-term consolidated discount notes. The reset dates of variable-rate advances are either match-funded with floating rate bonds or short-maturity discount notes, or are hedged using interest rate swaps. Short-term investments are largely funded with deposits of identical maturities.

Prepayment fees

Match funding provides an effective hedge against interest rate risk; it does not, however, protect against the risk of prepayment. Prepayment risk occurs when an advance is prepaid and the debt that was used to fund the advance cannot be prepaid or reinvested at an equivalent rate. The risk of prepayment of advances is curtailed through the use of prepayment fees. The regulator has directed the Banks to charge a fee for early prepayment of advances with maturities longer than six months. The Banks have the discretion to set prepayment conditions on advances with maturities of six months or less.

The prepayment fee is set to make the Bank financially indifferent to the borrower's decision to prepay. The fee equals between 90 and 110 percent of the present value of the lost cash flow to the Bank based upon the difference between the contract rate on the advance and the rate on new advances of the same maturity. The discount rate for calculating the present value is the current offering rate for a new advance of the same remaining maturity. If the Bank reinvests the prepayment fee and the funds from the prepaid advance, it will receive enough income to continue funding the liability that cannot be prepaid or reinvested at an equivalent rate. The prepayment fee thus makes it easier for the Banks to manage their assets and liabilities since they can assume a more stable cash flow.

Synthetic match funding

Some Banks make advances when maturity match funding is not feasible and use hedging techniques to match-fund synthetically in order to lock in a guaranteed spread. The synthetic hedging attempts to ensure a certain interest rate spread despite assets and liabilities being repriced at different times.

Swaps are the Banks' major form of hedging activity. As of year-end 1989, the Banks had about $32 billion in swaps outstanding which were used to hedge their own assets and liabilities. The Banks also engage in swaps to assist members with their asset-liability management, but the majority of the swap activity is with nonmembers. When a Bank enters into a swap with a member, it may also enter into an offsetting swap with a nonmember in order to protect against adverse changes in interest rates. Swap activity varies considerably by Bank, with two Banks (which are among the largest institutions) accounting for over 50 percent of all swap activity in the Bank System and four Banks accounting for about 70 percent. The Banks generally use swaps because they are often cheaper than variable rate consolidated obligations.

In a typical swap transaction for a Bank's own account, a

Bank may issue a variable rate advance to a member tied to an interest rate index such as the London Interbank Offered Rate (LIBOR) and fund the advance with a fixed-rate consolidated obligation that matures when the advance matures. To reduce the uncertainty in the Bank's interest rate spread, the Bank enters into a swap in which it pays a variable amount based on the movements in the pricing index and receives a fixed payment. This swap effectively converts a fixed rate liability into a variable rate liability, thereby insulating the spread the Bank earns on the advance from interest rate risk.

Banks also enter into other contracts to manage interest rate risk. These agreements may include floors under the level of payments a Bank will receive or caps on the total amount of variable payments it will make. These caps, floors, and collars (which combine both features) protect the Banks further against unexpected interest rate volatility.

In addition to swaps, the Banks also hedge in the cash, futures, and options markets. As of year-end 1989, the Banks had about $1.3 billion invested in futures contracts compared with $32 billion in swaps. Clearly, the amount of assets being hedged represents a relatively small proportion of the Banks' total assets. Data is not available at the Bank System level on hedging in the options market, which appears to be smaller in magnitude than the futures hedging.

Interest rate futures and options are two of the more sophisticated methods for managing interest rate risk, and, as with swaps, they appear to be concentrated in a few Banks. FHFB policy establishes general parameters for these activities within which the Banks operate. Long and short positions in the cash and financial futures markets, and long positions in the options markets are permitted if they reduce the interest rate risk exposure of a Bank. Hedges must be specific; cash, financial futures, or options positions must be identified with a specific asset, liability, or commitment.

The bulk of the Banks' hedging activity occurs because of the time interval between when a member obtains an advance and when the funding for the advance is secured. This happens because a member can obtain an advance at any time, but a Bank obtains longer term funding on a monthly basis, when all the Banks jointly issue consolidated obligations. Therefore, a Bank may engage in hedging to lock in the interest rate on an advance in cases where an advance or commitment was made prior to the sale of the bond to fund it, or vice versa.

There is the possibility that changes in interest rates will affect the hedge instrument and the underlying security differently (i.e. basis risk). If the price spread between the hedged item and the hedging vehicle widens significantly, losses may occur that reduce or eliminate the benefit obtained from the hedge. Hedges over a short period of time do not have as much basis risk as longer term hedges since there is less likelihood that interest rates will change significantly over the short time frame. To assure that basis risk is minimized, the FHFB requires a price correlation between the two instruments of at least 90 percent. Each Bank engaged in hedging submits monthly reports to the FHFB that contain statistical analyses of the correlation between the hedging instrument and the hedged item.

Maturity gap analysis

Maturity gap analysis measures the dollar value difference between assets and liabilities that are grouped together by maturity and that reprice during that maturity period. Gap analysis permits an institution to estimate how a change in interest rates would affect net interest income. A positive gap indicates that more assets than liabilities will reprice during a particular time period; a negative gap is the reverse. Seven of the Banks rely primarily on gap analysis to measure interest rate risk.

The Bank System's total cumulative gap[19] as of year-end 1989 was 7.8 percent of risk sensitive assets, which indicates that the Banks are asset sensitive, i.e. a greater portion of their assets reprice before their liabilities.[20] This means the Bank System benefits during periods of rising interest rates. The Banks' aggregate position is the reverse of many savings associations which are liability sensitive because they fund long-term assets, such as home mortgages, with short-term liabilities.

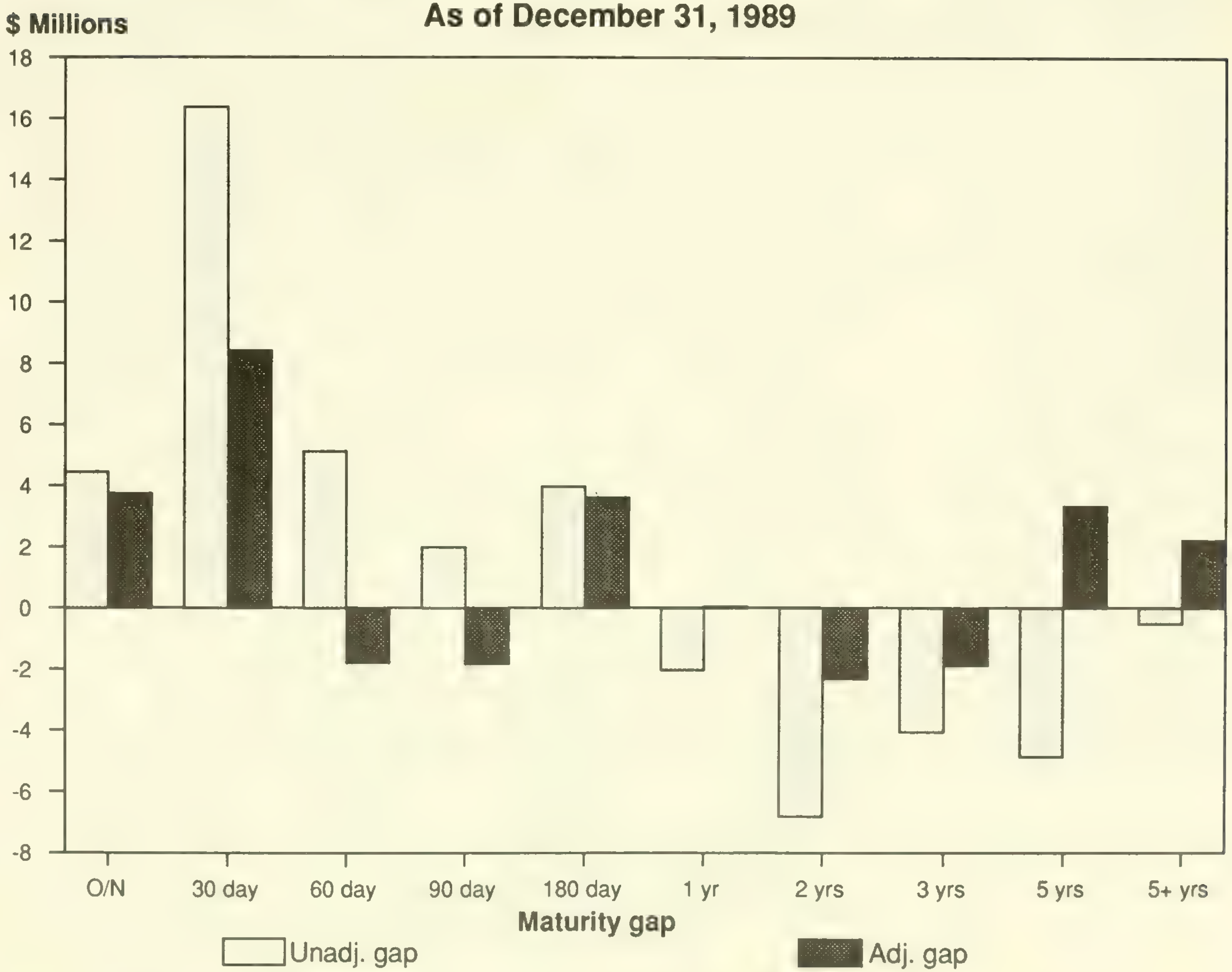
As Table 4 indicates the Banks' use of swaps restructures their cashflows so that a better match exists for each maturity bucket or period. Chart 1 shows that, with the exception of the longest maturity bucket, the size of the gaps in all maturity periods declined. In addition, without the use of swaps, the Banks would have negative gaps in their longer-term maturity buckets, i.e. their long-term liabilities would reprice before their long term assets leaving the Banks vulnerable to increases in interest rates. The swaps reversed the Bank System's sensitivity to changes in interest rates by having liabilities reprice with the same frequency as corresponding assets.

Of the Banks that use some type of gap analysis to measure interest rate risk, several target a particular gap. Others attempt to maintain a certain ratio of risk-sensitive assets to risk-sensitive liabilities for a specific maturity gap period, e.g. within 90 percent and 110 percent of a perfect match. Some Banks do not have specific gap targets but have stated policies of maturity match funding assets and liabilities as closely as possible.

Chart 1

Federal Home Loan Banks
Adjusted vs. Unadjusted Gap

As of December 31, 1989



Source: Office of Finance, Federal Home Loan Banks

Table 4
Federal Home Loan Banks
Interest Sensitivity Analysis

As of December 31, 1989
($ millions)

	O/N	30 day	60 day	90 day	180 day	1 yr	2 yrs	3 yrs	5 yrs	5+ yrs	Total
Rate Senstive Assets											
Fixed Rate Advances	1,297	8,700	7,746	6,516	15,476	14,166	21,657	13,326	18,465	10,173	117,522
Variable Rate Advances	1,082	14,343	2,691	1,542	1,997	1,819	357	220	188	0	24,239
Total Advances	2,379	23,043	10,437	8,058	17,473	15,985	22,014	13,546	18,653	10,173	141,761
Investments	25,736	1,718	1,199	700	245	47	162	90	31	3,967	33,895
Other loans	0	160	420	160	0	0	3	85	65	70	963
Total Rate Sensitive Assets (RSA)	28,115	24,921	12,056	8,918	17,718	16,032	22,179	13,721	18,749	14,210	176,619
Interest Rate Swap Effect	(50)	273	244	884	903	(30)	(1,105)	(184)	(530)	(405)	—
Total Adjusted Risk Sensitive Assets (Adj. RSA)	28,065	25,194	12,300	9,802	18,621	16,002	21,074	13,537	18,219	13,805	176,619
Rate Sensitive Liabilities											
Deposits	22,982	1,606	313	198	294	120	27	2	1	0	25,543
COs – Discount Notes	448	3,265	3,945	2,647	3,987	2,445	0	0	0	0	16,737
COs – Medium-term Notes	5	42	12	1	119	134	114	88	119	305	939
COs – Bonds	200	3,635	2,647	4,075	9,305	15,359	28,839	17,609	23,410	14,407	119,486
Total COs	653	6,942	6,604	6,723	13,411	17,938	28,953	17,697	23,529	14,712	137,162
Other Borrowings	25	0	5	0	15	0	3	85	65	0	198
Total Rate Sensitive Liabilities (RSL)	23,660	8,548	6,922	6,921	13,720	18,058	28,983	17,784	23,595	14,712	162,903
Interest Rate Swap Effect	628	8,217	7,155	4,696	1,265	(2,117)	(5,593)	(2,369)	(8,732)	(3,151)	—
Total Adjusted Risk Sensitive Liabilities (Adj. RSL)	24,288	16,765	14,077	11,617	14,985	15,941	23,390	15,415	14,863	11,561	162,903
Gap Amounts & Interest Sensitivity Ratios											
Unadjusted Gap (RSA-RSL)	4,455	16,373	5,134	1,997	3,998	(2,026)	(6,804)	(4,063)	(4,846)	(502)	13,716
Adjusted Gap (Adj. RSA-Adj. RSL)	3,777	8,429	(1,777)	(1,815)	3,636	61	(2,316)	(1,878)	3,356	2,244	13,716
Unadjusted Gap to Total RSA	2.52%	9.27%	2.91%	1.13%	2.26%	-1.15%	-3.85%	-2.30%	-2.74%	-0.28%	7.77%
Adjusted Gap to Total RSA	2.14%	4.77%	-1.01%	-1.03%	2.06%	0.03%	-1.31%	-1.06%	1.90%	1.27%	7.77%

Source: Office of Finance, Federal Home Loan Banks.

There are several disadvantages with gap analysis. Periodic gap analysis does not provide a single number quantifying the interest rate risk exposure of a target account, such as equity. In addition, it ignores the repricing intervals within maturity buckets. Finally, gap analysis focuses on changes in an institution's net interest income, rather than changes in the market value of assets and liabilities, due to fluctuations in interest rates. Thus, the periodic gap model provides less information for monitoring and controlling interest rate risk than duration analysis.

Duration analysis

Duration is a measure of the weighted average life of the cashflows of a security. It relates changes in interest rates to percentage changes in the prices of assets and liabilities. If both sides of the balance sheet have a similar duration (i.e. a small duration gap) a given change in interest rates will have less impact on the balance sheet, making that institution less sensitive to interest rate risk.

Five Banks use duration analysis to determine the interest rate sensitivity of their balance sheets. One Bank focuses on the duration gap between assets and liabilities and four Banks target their duration of equity, which is essentially a duration gap, weighted by the market value of the Bank's assets and liabilities. (See Table 5 for a definition.)

Calculating duration of equity permits the Banks to measure the impact of a change in interest rates on the value of equity.[21] The greater the magnitude of the duration of equity, the more sensitive the value of equity is to a change in interest rates. A duration of zero implies that the equity of a Bank is insensitive to changes in interest rates.

As Table 5 indicates, the duration of these Banks' assets and liabilities were closely matched as of year-end 1989. The asset and liability duration gap for the five Banks ranged from negative 4.6 months to positive 1.9 months. However, there were large differences in the Banks' durations of equity, which ranged from about 6 months to negative 85 months as of year-end 1989. Two of the Banks appear to have equity accounts with minimal sensitivity to interest rate risk.

However, the other two institutions have significantly more interest rate exposure. The Bank with the duration of negative 85 months has a stated target duration of equity target of one month. It has indicated that due to large and rapid changes in the composition of its balance sheet, it cannot meet the one month target. This Bank is aware of the additional interest rate risk exposure that it currently has, and it is actively pursuing hedging strategies designed to minimize that risk and to achieve

Table 5
Selected Federal Home Loan Banks

Year-end 1989
(in months)

Selected Banks	Duration Assets	Duration Liabilities	Duration Gap	Duration Equity
A	17.1	15.2	1.9	41.8
B	17.5	17.4	0.1	n/a
C	12.9	13.7	-0.8	6.5
D	14.8	19.3	-4.6	-85.2
E	17.0	18.0	-1.0	5.6

Duration of Equity is computed by the following equation:

$$(MVA * DA) - (MVL * DL) = (MVE * DE)$$

$$DE = ((MVA * DA) - (MVL * DL)) / MVE$$

Where:

MVA = present value of assets
MVL = present value of liabilities
MVE = present value of equity = MVA - MVL
DA = duration of assets
DL = duration of liabilities
DE = duration of equity

Source: Federal Home Loan Banks.

its target within a year. The other Bank has set a maximum duration of equity of 60 months, which is considerably longer than the durations of equity other Banks are willing to tolerate.

Net interest margin

Successful asset-liability management can immunize the balance sheet from changes in interest rates. The Bank System's consolidated balance sheet and income statement indicate that the Banks have generally achieved a stable net interest margin over the past 10 years. As Chart 2 demonstrates, except for 1983, the Bank System's consolidated net interest income divided by average assets has ranged from about 90 basis points to about 130 basis points. The greatest volatility in the Bank System's net interest margin occurred during the early 1980's which was a period of unstable interest rates. It is important to note that despite this volatility in interest rates, the Banks were still able to maintain profitable interest margins.

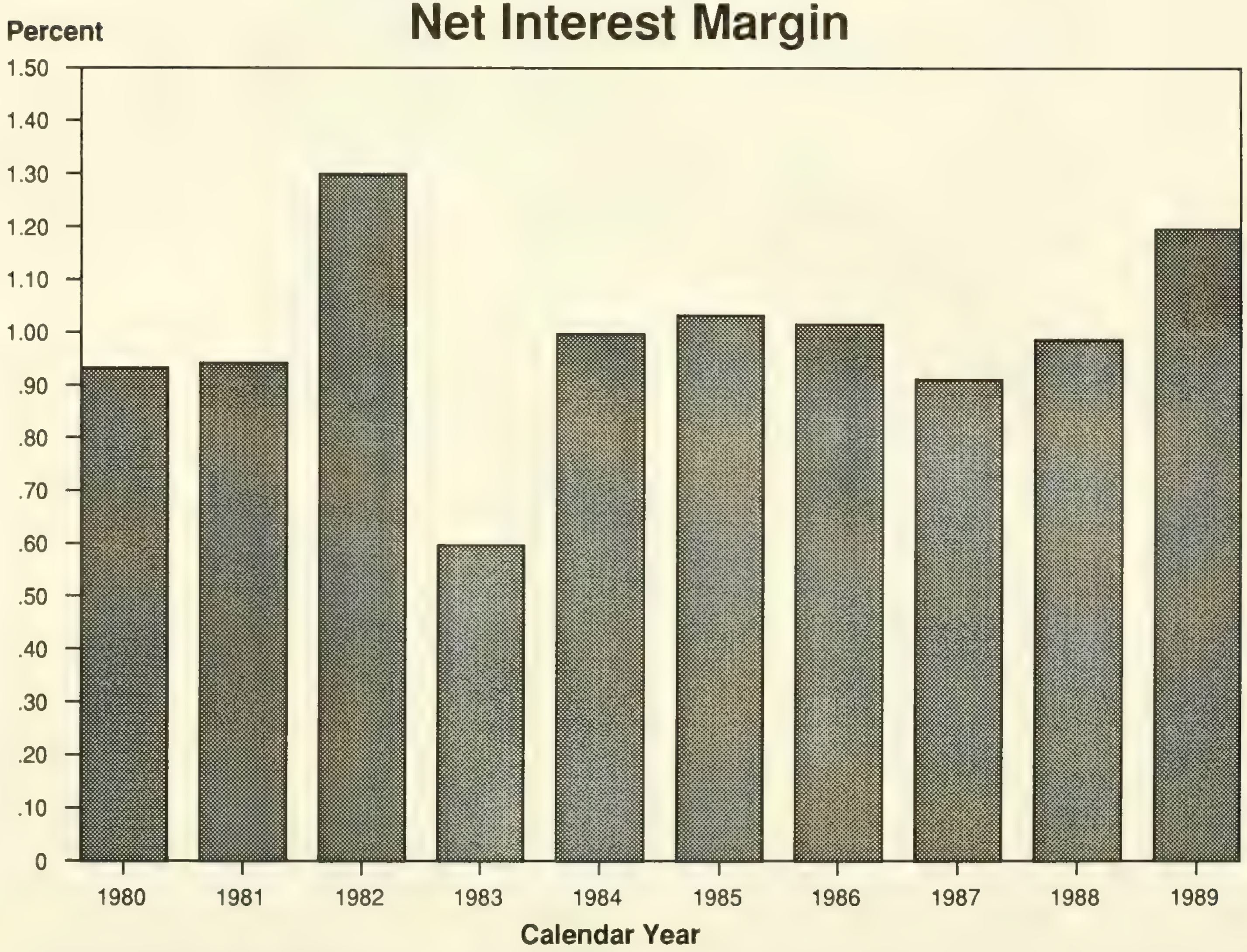
Conclusions and recommendations

The Bank System effectively manages its interest rate risk, although one Bank is currently exposed to a significant amount of risk due to rapid changes in its balance sheet. The relatively small variance in net interest margin indicates that the Bank System's asset-liability management is well-developed and that the Banks are protecting themselves from fluctuations in interest rates.

While all the Banks are cognizant of their interest rate risk and perform some type of analysis to quantify and manage it, the maturity gap analysis that some Banks use does not provide the same level of information about potential interest rate risk as duration analysis. Treasury would recommend that all the Banks consider using duration analysis and establish specific duration targets which are consistent with safe and sound operation.

Chart 2

Federal Home Loan Banks Net Interest Margin



Source: FHLBank System Annual Reports.

Management and Operating Risk

Overview

Treasury interviewed the FHFB to identify the controls and systems in place to monitor management and operating risks in the Banks. Interviews were also held with the Bank of Boston to determine how one of the Banks controls management and operating risk. The analysis centered on identifying management processes that control risk by monitoring operations, identifying issues which may pose potential risk, and implementing corrective measures.

The FHFB has placed general requirements on the Banks to establish policies and procedures to monitor and control their operations. Overall, the Banks have adequate controls and monitoring systems in place to minimize management and operating risk.

Planning

The Banks operate an organized and continuous planning process to prepare their annual business plans and operating budgets. The FHFB requires each Bank to prepare and submit an annual business plan and operating budget. All Banks use similar planning processes for this purpose. Plans are typically reviewed and ratified by each Bank's board of directors (board), and submitted to the FHFB annually.

The FHFB may exercise certain veto powers over the annual plan and budget. It would, for example, disapprove plans that projected negative earnings. Six of the Banks have long-term plans and budgets. There is, however, no policy requiring long-term planning by all the Banks.

The FHFB reviews the budget variances quarterly and the business plan semiannually. Follow-up regarding items of concern are performed as needed. The FHFB requires the Banks' to produce their annual budget broken out by functional areas. This is generally a less detailed listing than the line item budgets performed by the individual Banks.

At the Bank of Boston, the Senior Vice President for Planning operates a formal planning process on two levels: a five-year Strategic Plan, and an annual budget and business plan. The current Strategic Plan includes a Mission Statement developed for the major functional areas (financial management, products and services, marketing, and organization and management) with objectives and supporting strategies described in each. After approval by the board, plans are communicated throughout the organization to provide employees a consistent understanding of

Bank of Boston's goals.

Policy making

Policy-making procedures give an indication of how Bank management provides guidance for employees to make decisions and take actions. Typically, policy and decision making work through a defined committee structure. New policies and policy changes are ratified by the Bank's board, and the FHFB is routinely informed. Policies are continuously reviewed for appropriateness by the FHFB and at the Bank level.

The FHFB sets broad policy parameters within which Banks can operate and communicates them to Bank management through the president and board. While the FHFB does not actually examine the Banks on-site (although it does plan to begin doing so), it does monitor the bank's adherence to the FHFB's general policies via required reports. For example, the FHFB requires the Banks to forward copies of the minutes of their board meetings, which include all significant policies approved by the boards.

Monthly meetings between the Bank presidents and the FHFB provide opportunities for interdistrict communication and discussion of policy making initiatives, as well as the need for changes to existing policies. In addition, all the Banks' boards generally meet annually to discuss overall Bank System concerns.

At the Bank of Boston, responsibility for policy making rests with the senior officers operating through five major standing committees. All policies are subject to final approval by the President and the board. Approved policies are written into the internal policies and procedures handbook. Notification of changes to policies is communicated throughout the Bank via monthly meetings of officers and department staff. Internal audits review all policies to ensure they are implemented.

Control systems

Control systems help monitor compliance with policies, plans, and regulations. The Banks have the necessary systems to monitor delegated activities, to inform management of the soundness of the organization's activities, and to correct deficiencies promptly.

The FHFB sets the charter for the internal audit policies and internal auditors at each Bank. The charter, which follows American Institute of Certified Public Accountants (AICPA) standards, stipulates that the board's audit committee meet regularly and the internal auditor report directly to that committee. All Internal Audit Departments prepare an annual audit plan and some prepare a long-term audit plan. The plan allocates the deployment of audit resources based on a risk rating system. The plan is approved by the Bank's board and the FHFB reviews each plan. The IG has indicated that in the past the Banks have complied with the charter requirements and have performed quality audits.

Within the Banks themselves, the internal audit departments test for proper operation and effectiveness of controls. Audit concerns are discussed with management and reported directly to the board's audit committee. The internal audit department tracks the status of concerns and monitors corrective actions. The audit committee meets regularly with internal auditors to discuss findings and to monitor follow-up of problem areas or open matters. The FHFB receives copies of all internal audits and tracks the resolution of problems uncovered. In the past, verification of corrective action has been performed in the next audit.

Each Bank is required to have an independent public accounting firm perform an annual external audit. The IG selects the public accounting firm and the firm is the client of the FHFB, not the Banks. The IG reviews the engagement letter for appropriateness and is apprised of problem issues as they arise. The IG is not involved in the actual audit process. The external auditor's report is presented to the board and management for comment. Any concerns listed in management letters are tracked by the internal audit department and monitored by the FHFB. The most recent external audits disclosed no material weaknesses.

Management Information Systems

The Management Information Systems (MIS) were reviewed to determine how well information is reported to the FHFB and Bank management to help them monitor and evaluate the Banks' activities. Overall, appropriate systems and controls exist to generate accurate reports.

The FHFB requires each Bank to submit regular reports on a variety of matters for its review. These reports include budget variance reports, financial statements, business plan reports, and reports on advances. While reporting requirements are standardized, there are no specific requirements for computerized database management systems. Decisions regarding hardware and software are largely left to the Banks; as a result, MIS hardware and software generally are not uniform among the Banks. However, this lack of uniformity does not appear to represent a risk.

At the Bank level, responsibility for MIS generally lies with a Vice-President or higher official. At the Bank of Boston, for example, MIS works closely with the Controller's division and other divisions to ensure that the reports are of appropriate frequency and have enough detail. The Controller reviews financial reports for materiality and the audit department tests for accuracy and completeness.

In the Banks, internal audit reviews and evaluates the data systems, and an annual external audit supplements the Banks' internal audit. The management letters submitted by the Banks' external auditors note MIS concerns involving data security in some Banks. The external auditors did not consider the concerns material and comments indicate that corrective measures were taken.

Personnel administration

Systems, policies and procedures exist at the Bank level to develop and assure continuity of quality staff. The Banks have established organizational structures based on functional responsibilities and their overall objectives. They rely on the budget process to ensure that adequate staff levels exist in all functional areas and use established methods to hire and promote personnel to assure continuity. At the Bank of Boston, management succession is not formally planned; however, this has posed no problems due to the presence of long-tenured officers and adequate delegation of authority.

Communication lines and mechanisms vary among the different Banks, according to size and organizational structure. At the Bank of Boston, for example, both formal and informal communication lines exist to communicate information throughout the organization. Based on discussions with FHFB staff, there appear to be adequate internal communication lines at all of the Banks.

Conclusions and recommendations

The Banks adequately provide for: organized planning centered on a budget process; an identified organizational structure with committees that serve as the forum for policy-making; control systems reviewed, and often designed, by an internal audit office that reports to its board and supplemented by independent external audit services; an effective MIS; and, established personnel administration procedures.

Capital

Overview

The Banks' equity capital consists of (1) capital stock held by member institutions, and (2) retained earnings. As required by CEBA and FIRREA, the Banks will contribute most of their retained earnings as of December 31, 1988, to help finance the resolution of insolvent savings and loan associations. Despite this reduction in the Bank System's retained earnings, the Banks are well capitalized with a capital to asset ratio of approximately eight percent.

As of December 31, 1989, the Banks' total equity capital was $14.19 billion. The components were:

Stock	
Capital Stock Outstanding	$13.38 billion
Retained Earnings	
Legal Reserves	$ .35 billion
Dividend Stabilization Reserve	$ .38 billion
Undivided Profits	$ .08 billion
Total	$14.19 billion

Capital Stock

Every institution that belongs to the Bank System must purchase stock in its Bank. This capital stock is the Bank System's primary source of equity. The Banks' were capitalized initially in 1932 by the Treasury, which provided $125 million to the Banks in exchange for capital stock. The Banks had repurchased all of this stock from the Treasury by 1951. The FHFB has the authority to raise (but not lower) the price of any additional stock sold to new or existing members.

A member is generally required to hold capital stock equal to the greater of .3 percent of total assets, 1 percent of mortgage assets or 5 percent of outstanding advances. (For purposes of this computation, "advances" comprises all extensions of credit and the dollar amount of capital required for advances.) As mentioned in the business risk section, members that are not qualified thrift lenders are required to hold more stock against their advances than QTL members.

The Banks are permitted to increase the amount of capital stock required for outstanding advances by reducing the advances to capital stock ratio, from 20 to 1 to 12 to 1, which increases the stock to advances ratio from 5 percent to 8.3 percent.

Increasing the stock requirement could be one way to raise additional equity, although the higher required capital investment could lower the demand for advances. Thus, growth in advances is supported by at least 5 percent capital stock. Conversely, as members pay down advances or shrink their balance sheets, stock requirements also decline.

Potential withdrawal of stock

Some of the stock held by member institutions could potentially be withdrawn from the Bank System. The impact of the withdrawal of the stock on the Bank System's overall capital to asset and debt to equity ratios should depend, in part, on whether the stock is supporting outstanding advances. If members who do not borrow from the Bank System or who have excess stock redeem their stock, the redemption would increase the Bank System's debt to equity ratio. This would occur since the Bank System's funding needs would not be correspondingly reduced by a paydown in advances. The Banks now depend on the capital of non-borrowing members to support their credit operations. As Table 3 indicates, outstanding advances exceeded 12 times the stock of the borrowing members by about $9 billion.

Below is a discussion of four categories of stock that could potentially leave the Bank System.

State-chartered thrifts. As mentioned in the business risk section, a state-chartered thrift, which does not borrow from its district Bank, has informed the FDIC that it wishes to leave the Bank System. It has requested that the FDIC rule that membership in the Bank System is not a necessary condition for it to qualify for deposit insurance. If the FDIC rules in favor of the institution's request, there is a potential for at least 400 state-chartered members which joined the Bank System under similar circumstances and which have $720 million in capital stock to leave the Bank System. In addition, if the FDIC rules that state-chartered thrifts do not have to retain membership, a total of 1,085 state-chartered members with $2.3 billion in capital stock could choose to the leave the Bank System. To the extent that these state-chartered members do not borrow from their district Banks, the withdrawal of the stock could have an adverse impact on the Banks' overall debt to equity ratio.

Excess stock. Some members have voluntarily held more equity than required for membership or advances, which is referred to as excess stock, because of the stock's attractive rate of return or because of an expected increase in future borrowings. In addition, as a member's stock requirement falls, due either to a shrinking balance sheet, which lowers the 1 percent stock requirement, or to a paydown in advances, which lowers the 5 percent of advances requirement, a member's stock becomes eligible for redemption. As of December 31, 1989, the

SAIF-insured members had held $1.5 billion in excess stock.

It is important to note that the Banks may redeem excess stock at their discretion.[22] However, the Banks have generally redeemed excess stock when requested.

Insolvent thrifts. The stock held by SAIF-insured thrifts will most likely decline as the RTC resolves the Bank System's insolvent members and pays off the advances. As of March 31, 1990, thrifts with negative tangible capital held $2.7 billion in stock. A significant number of these thrifts are in, or are deemed by OTS likely to be placed in, conservatorships. This stock could potentially be withdrawn as advances are repaid if the acquiring institution does not belong to the Bank System or if the thrift is liquidated.

BIF-insured members. Another category of stock that could potentially be withdrawn is that held by voluntary members, i.e. non-SAIF insured institutions. Voluntary members, as of March 31, 1991, held about $1.4 billion in stock. As discussed in the business risk section, voluntary members, which are concentrated in a few districts, hold a relatively large amount of stock. For example, as Table 3 indicates, in New York 37 BIF-insured savings banks held $543 million in capital stock compared to 110 federally-chartered thrifts that held $647 million in stock. To the extent that this stock is supporting outstanding advances, any withdrawal from the Bank System would result in a paydown in advances and, therefore, should not adversely affect the Bank System's debt to equity ratio.

Retained Earnings

Retained earnings are comprised of a legal reserve, a dividend stabilization reserve, and undivided profits. Prior to FIRREA, retained earnings grew steadily due, in part, to a statutory requirement that the Banks transfer 20 percent of their net income to the legal reserve until the reserve equaled the capital stock amount. Thereafter, only 5 percent of the Banks' net income would have to be allocated for this purpose. FIRREA repealed this provision effective January 1, 1992. After that date, the Banks only need to add to their reserve accounts at the discretion of their board of directors.

A Bank's dividend stabilization reserve generally has a restricted component, which contains the income from prepayment fees which, if allocated on a pro rata basis over the maturity of the prepaid advances, would be available to pay future dividend payments. As noted earlier, prepayment fees approximately equal the present value of the lost cash flow to a Bank due to the prepayment of an advance. Retained earnings that do not flow to the legal reserve and restricted dividend stabilization reserve could go either to an unrestricted component of the dividend stabilization reserve account or undivided profits.

From 1980 to 1988, Bank System retained earnings increased by 170 percent, from $869 million to $2.82 billion, not including the Banks' required capital distribution to FICO. However, as a result of the recent legislation, retained earnings declined to $811 million as of year-end 1989 -- slightly less than their 1980 level. Retained earnings should decline further as the Banks make their remaining contributions to REFCORP.

It is not clear that the Banks will rebuild their retained earnings to their pre-FIRREA level. In the recent past, the Banks have generally paid most of their net earnings available for dividends to members. In 1989, the Bank System paid out in dividends a total of $1.4 billion, approximately 77 percent of its net income, -- $540 million in cash and $900 million in stock. (In other years, the Banks have paid dividends in amounts that were less than or greater than 80 percent of net income by virtue of discretionary additions to or deductions from the dividend stabilization reserve account.) Given the use of the Bank System's retained earnings to help pay for thrift resolutions, the Bank System members, who own the Banks, may prefer receiving the dividends to rebuilding reserves.

However, the FHFB approves the Banks' quarterly dividends so it could establish a dividend policy that directs the Banks to rebuild their reserves. While FIRREA did away with the statutory reserve requirement, the FHFB could establish reserve requirements under its duty to "ensure that the Federal Home Loan Banks operate in a safe and sound manner."[23]

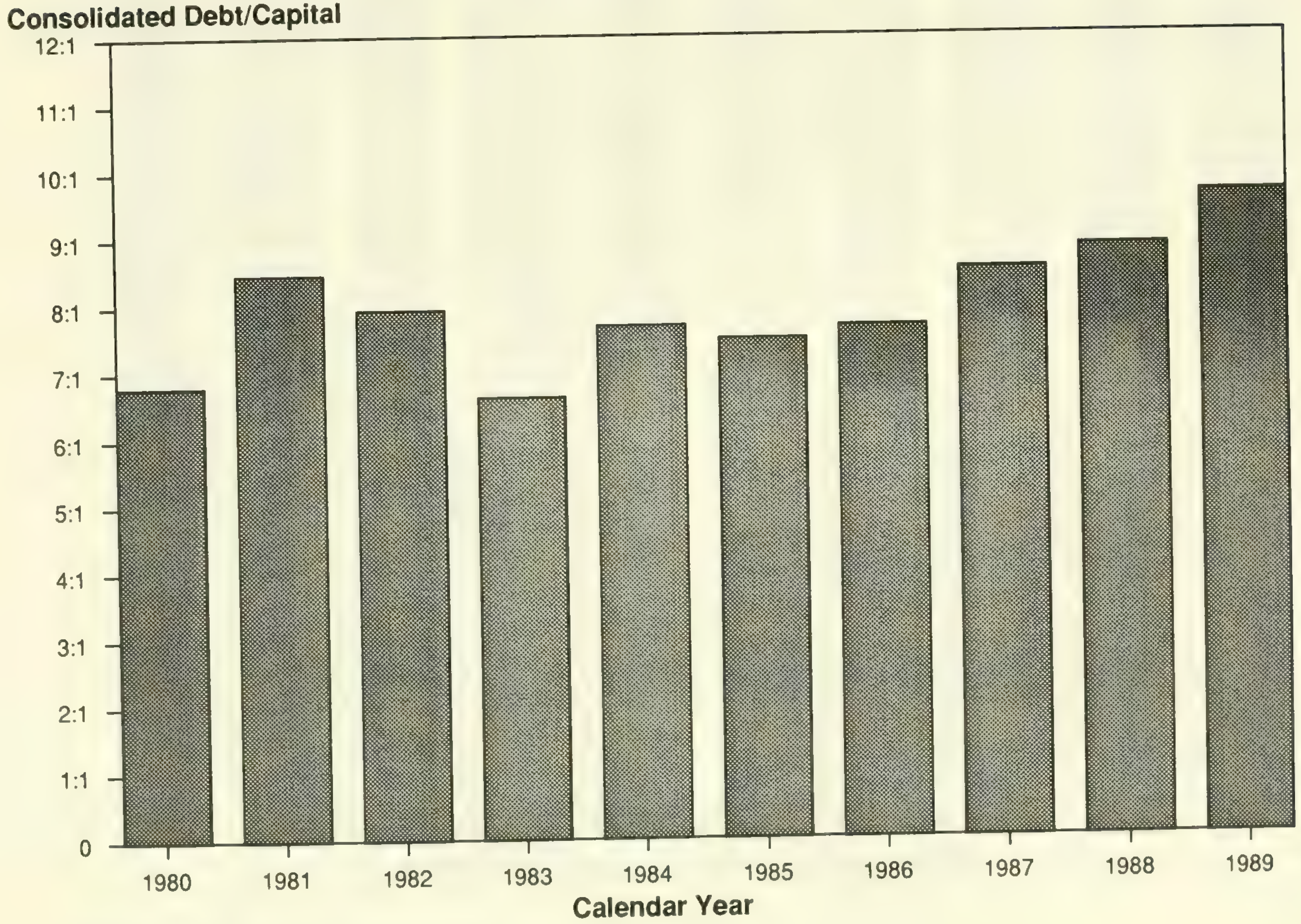
Debt to Equity Ratio

By regulation, the Banks' outstanding consolidated debt cannot exceed 12 times the Bank System's aggregate equity. Given the Banks' $137 billion in outstanding consolidated debt and $14 billion in capital at year-end 1989, this ratio was still below the regulatory maximum of 12 to 1. As Chart 3 indicates, the Banks' leverage has increased from a consolidated debt to equity ratio of approximately 6 to 1 in 1980 to approximately 10 to 1 as of year-end 1989. (Bank deposits are not included in the debt.)

A preliminary analysis indicates that, although the Bank System as a whole has not exceeded the maximum ratio, two individual Banks have done so and an additional Bank could reach its limit within a few months. If the capital stock held by non-borrowing members or further excess stock is redeemed, the Bank System's overall leverage could increase. Some of the Banks are investigating whether the regulation could be modified prospectively, as long as the protection afforded current

Chart 3

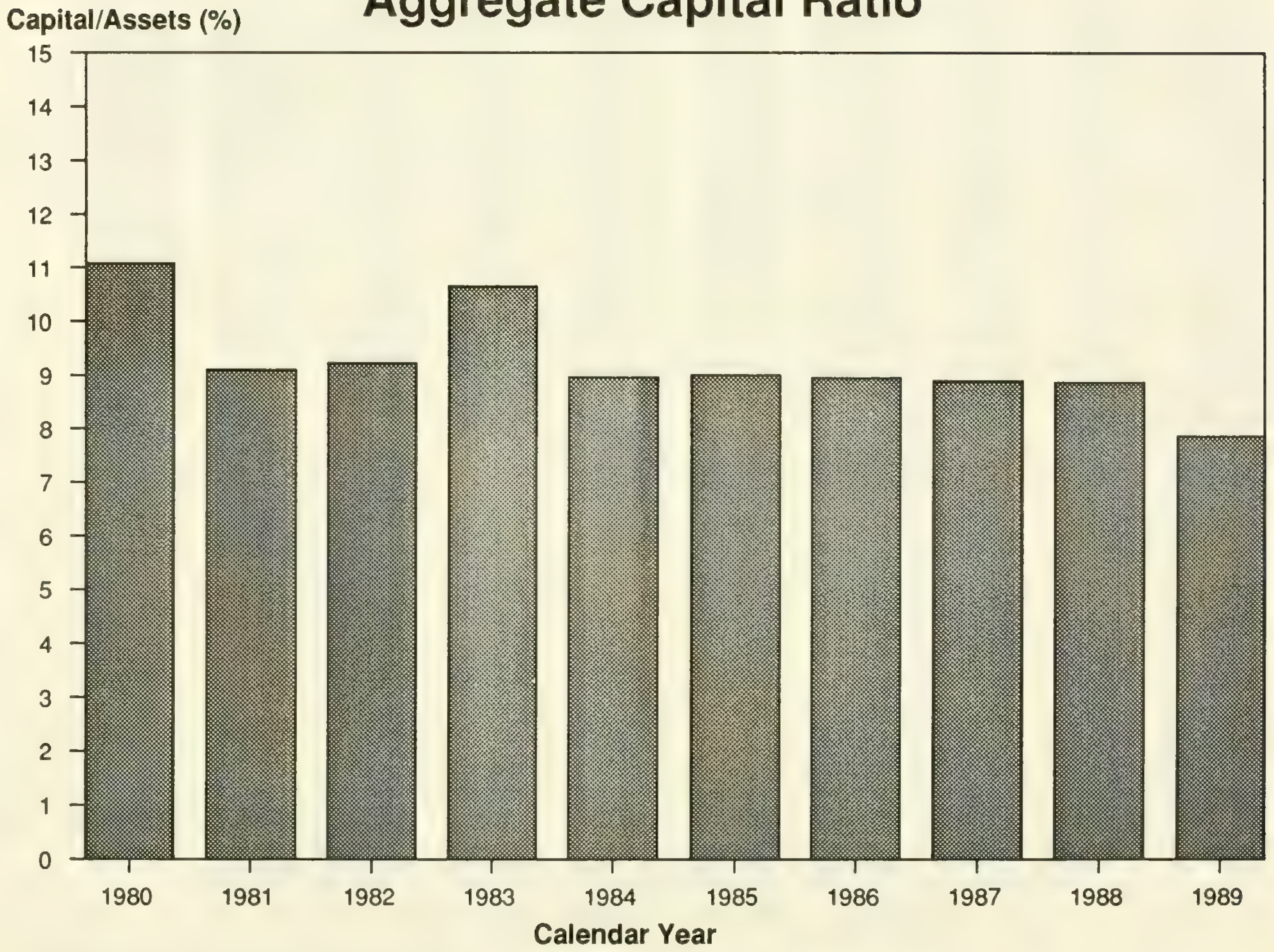
Federal Home Loan Banks
Ratio of Consolidated Debt to Capital



Source: Federal Home Loan Banks Annual Reports.

Chart 4

Federal Home Loan Banks Aggregate Capital Ratio

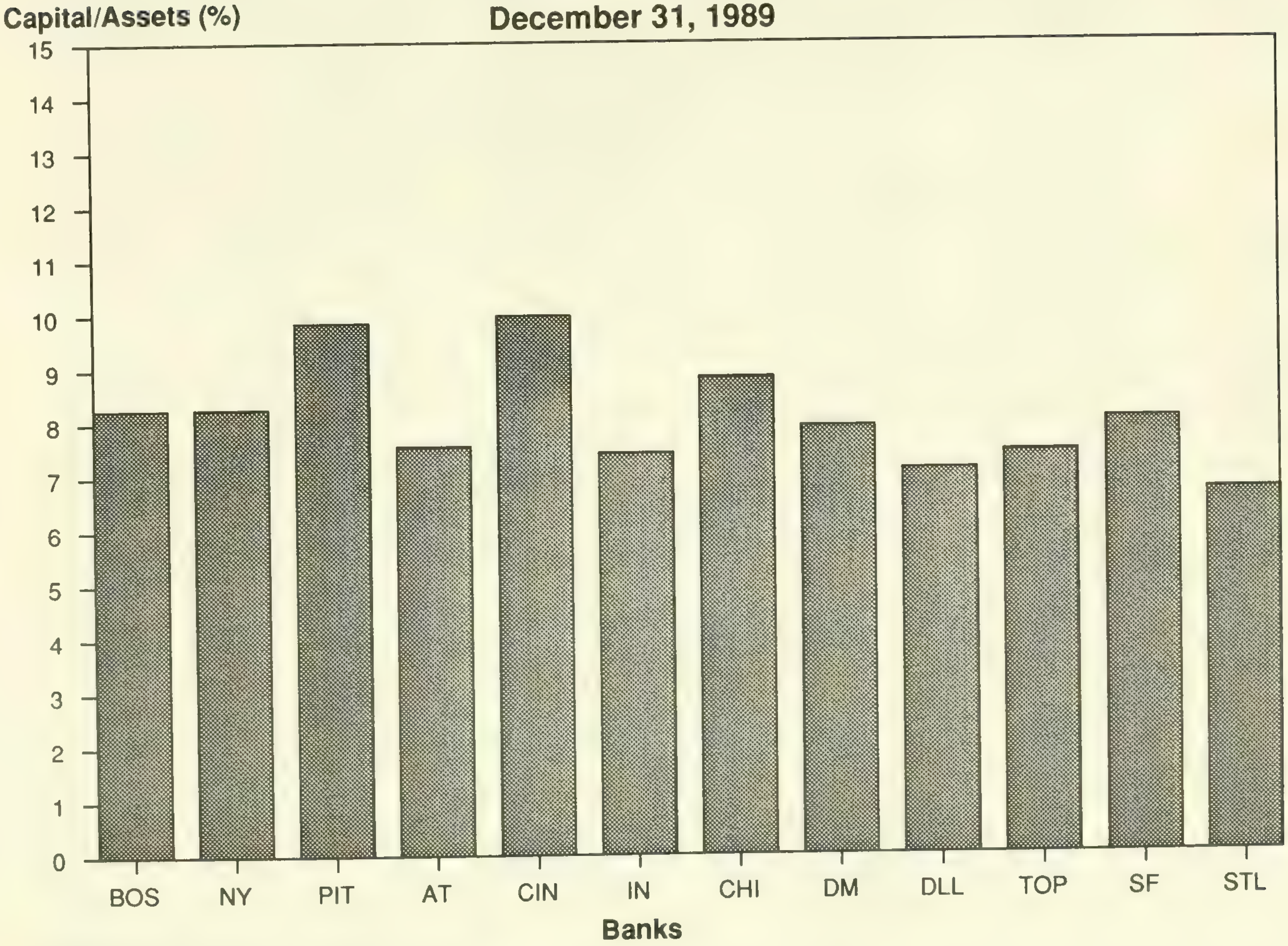


Source: Federal Home Loan Banks Annual Reports.

Chart 5

Federal Home Loan Banks
Captial Ratios

December 31, 1989



Source: Federal Home Loan Banks Annual Reports.

bondholders is maintained. The FHFB, which has the authority to modify the regulation, is monitoring the situation.

Overall Capital Ratios

As Chart 4 indicates, after declining from a high of 11 percent in 1980, the Banks' equity capital to asset ratio remained roughly constant from 1981 through 1988 at approximately 9 percent. However, mainly as a result of the legislated FICO and REFCORP contributions, the Banks' capital to asset ratio declined to 7.9 percent as of December 31, 1989.

The Bank System's capital to assets ratios vary by Bank, as Chart 5 demonstrates. As of year-end 1989, these ratios ranged from a high of 10.0 percent to a low of 6.7 percent. The median capital ratio was approximately 8 percent. Therefore, all the Banks currently exceed by a considerable amount the 3 percent core capital leverage ratio required for thrifts.

Risk-Based Capital

The Banks' capital to asset ratios do not take into account the relatively low risk nature of the Banks' activities. This study has not calculated the Bank System's capital under the risk-based capital rule for thrifts -- it is expected to be included in the 1991 study. However, a preliminary analysis indicates that the Banks would most probably exceed the current (6.4 percent) and the fully phased-in (8 percent) risk-based capital standard for thrifts by a significant amount.

If advances (79 percent of the Bank System's assets as of year-end 1989) are risk-weighted according to the risk of the underlying collateral, which is predominantly mortgage-related, they would probably receive a risk weighting no higher than 50 percent. In addition, the Banks' investments which are primarily federal funds (19 percent of assets) would generally receive a 20 percent risk weight. Including the Bank System's off-balance sheet activities, which are primarily swaps, would lower the risk-based ratio somewhat, but probably not significantly. Therefore, given the Bank System's current 8 percent equity capital to assets ratio, its capital to risk-adjusted assets ratio would certainly be higher than the 8 percent risk-based standard which savings associations will be required to meet after December 31, 1992.

Conclusions and recommendations

Although the Banks' capital has declined over the past year, their capital level still remains strong, especially given the low amount of credit, interest rate, and management and operating risk that appears to be in the Bank System. Furthermore, if the

System's capital were measured on a risk-adjusted basis, it would almost certainly exceed the amount required for banks and thrifts by a substantial amount.

While the Bank System as a whole is currently more than adequately capitalized, the potential withdrawal of voluntary and the further withdrawal of excess stock should be monitored. It may become necessary to set minimum capital to asset ratios to ensure that all the Banks maintain adequate capital protection in the future that reflects their on- and off-balance sheet activities.

A potential problem is the small amount of retained earnings available to cover thrift losses. If a Bank were to sustain losses and did not have retained earnings or a loan loss reserve, its capital stock could become impaired. Since all member thrifts carry the stock as an asset on their balance sheets, this could have a negative impact on the ability of solvent thrifts to meet their own capital adequacy ratios. Therefore, the FHFB should investigate the benefits of either a modest loan loss reserve or establishing a dividend policy to encourage the Bank System to rebuild its retained earnings.

The overall safety and soundness of the Bank System is protected by the current regulatory and statutory provisions ensuring that debt obligations are supported by 8.3 percent capital and advances are supported by at least 5 percent capital stock.

Quality and Timeliness of Information

Overview

The Bank System provides accurate and frequently updated information to the FHFB, the Federal Government, and the public on a regular basis.

Information provided to the FHFB

The Banks provide the following financial information to the FHFB on a monthly basis: statements of condition and income; FSLIC Resolution Fund contingency reports; reports on letters of credit; reports on hedging activity; statistical summary of advances; and weighted average rates on advances. The Banks also provide monthly local board minutes and other reports, as appropriate.

On a quarterly basis, the Banks submit budget and cashflow reports. Annually, they provide audited financial statements; equal opportunity reports; a survey of officer salaries; compliance information; and a private sector adjustment factor.

Information provided to the public

The Banks and the FHFB annually provide an annual audited report of the Bank System. In addition, the Office of Finance compiles quarterly financial statements and the FHFB publishes a monthly combined statement of condition in the Journal of the Office of Thrift Supervision.

Information to Congress

The Bank System reports annually to Congress on its financial condition and the GAO audits the Bank System every three years.

Conclusions and recommendations

Both the FHFB and the public are receiving timely and accurate information on the Bank System from the Banks.

CONCLUSIONS AND RECOMMENDATIONS

The Banks are conservative, well-managed institutions that have posed little risk to the Federal Government. However, it is apparent that the Banks are now operating in a new environment. Recent changes designed to strengthen the thrift industry that could in the short-run reduce Bank earnings include: (1) new capital requirements that are causing many thrifts to shrink their balance sheets, resulting in a falling demand for advances; and (2) the resolution of insolvent thrifts that could lead to a paydown of advances, and potentially a withdrawal of stock.

However, the current regulation which limits the Banks' aggregate ratio of consolidated debt to capital to 12 to 1 appears to ensure that the Banks will remain adequately capitalized.

The major business risk to the Bank System at this time is the declining demand for advances as a result of a contracting thrift industry. Although the Banks have been very profitable in the past, their earnings over the next few years could fall if the volume of advances declines.

The Banks are attempting to deal with the potential decline of their revenue by actively marketing their products to their current as well as new members and by finding alternative investments. Treasury would encourage the Banks to focus on attracting new members and increasing lending to existing members rather than incurring the additional risks associated with alternative investments.

The Banks' have successfully managed their credit risk, as demonstrated by the fact that they have never lost money on an advance. In addition, the Banks have effectively limited counterparty risk in their use of swap transactions. Because of the Banks' credit history and because of their conservative collateralization policies, the Bank System's external auditors have never required the Banks to establish reserves for loan losses.

However, certain Banks have exposure to failed and failing thrifts. Treasury recommends that the FHFB investigate whether individual Banks should consider establishing a modest loan loss reserve.

As with credit risk, there is little evidence that interest rate risk poses a threat to the Bank System. The Banks have generally protected their balance sheets from fluctuations in interest rates through maturity match funding, and the use of swaps and other hedging techniques. This is demonstrated by their generally stable net interest margin over the past ten years. The one area of concern is the wide variance in the techniques used to measure interest rate risk. To ensure that all the Banks can protect against unexpected interest rate volatility, Treasury recommends that the FHFB consider requiring all the Banks to use duration analysis to quantify their interest rate risk and to report this information to the FHFB on a regular basis.

The Banks have established policies and procedures to monitor and control management and operating risk. With respect to the quality and timeliness of information, the Banks provide accurate and frequently updated information to the FHFB and the public on a regular basis.

Given the relatively low-risk nature of the Banks' operations, the Bank System now appears to be adequately capitalized. Even with the contribution of most of its retained earnings as of December 1988 to help pay for the resolution of insolvent thrifts, the Bank System's capital to asset ratio is about 8 percent and would probably be considerably larger if measured on a risk-adjusted basis.

To ensure that all the Banks maintain capital, which fully reflects the risk of their activities, it is recommended that minimum capital standards that reflect such risk be considered. Finally, to protect the Bank System's capital stock from unexpected losses, the FHFB should consider setting either a dividend policy that would lead to the rebuilding of the Banks' retained earnings or requiring Banks to establish a modest loan loss reserve, as appropriate.

It is possible that the Bank System's capital will decline over the next few years. However, the regulation limiting consolidated obligations to 12 times the Banks' aggregate capital appears to ensure that any shrinkage of the Bank System would generally occur in an orderly manner.

ENDNOTES

1. Public Law No. 72-304, 47 Stat. 725 (July 22, 1932)

2. Public Law No. 73-43, 48 Stat. 128 (June 13, 1933)

3. Public Law No. 73-479, 48 Stat. 1246 (June 27, 1934)

4. Public Law No. 100-86, 101 Stat 552 (August 10, 1987)

5. Public Law No. 101-73, 103 Stat. 183 (August 9, 1989)

6. The regulation states that in order for the ratio to be modified: (1) there may be no consolidated obligations outstanding; or (2) funds to cover the interest and principal of all outstanding obligations must be deposited in the Treasury. See 12 C.F.R. 910.1 and 910.6.

7. 12 U.S.C. 1426(e).

8. The Banks had approximately $12 billion in capital stock as of March 31, 1990.

9. Bank standby letters of credit and confirmation shall only be used in conjunction with tax-exempt bonds or notes when the issues are designed to promote housing development. According to FHFB guidelines, letters of credit and confirmation issued under these circumstances will be limited to the greater of 25 percent of the tax-exempt issue or 5 percent of the member's assets.

10. The FHFB has required the Banks to maintain reserves, referred to as funds management portfolio levels, equal to no less than the sum of the following: 20 percent of demand and overnight time deposits and borrowings; 10 percent of all other deposits and consolidated obligations maturing within one year; and 100 percent of repurchase liabilities. Reserves may be invested in overnight funds, fixed-term funds with maturities no longer than 93 days, certificates of deposit with remaining term to maturity of no longer than 6 months, bankers' acceptances eligible as collateral at a Federal Reserve Bank with a remaining maturity of 6 months, and certain resale agreements.

11. See 12 U.S.C. 1431(i). The Banks must repay funds borrowed under this subsection at "the earliest practicable date."

12. 12 U.S.C. 1440 provides that the FHFB shall from time to time, at least annually, require examinations and reports of condition of all Banks as the FHFB shall prescribe. FIRREA provides that, in addition to such examinations, the General Accounting Office may audit or examine the FHFB and the Banks to determine the extent to which the FHFB and the Banks are fairly and effectively fulfilling the purposes of the Bank Act.

13. The powers and duties of the FHFB are contained in 12 U.S.C. 1422b.

14. For a further discussion of this issue, see "Response of the Federal Housing Finance Board to the Petition of Wauwatosa Savings and Loan Association to Withdraw from the Federal Home Loan Bank System," submitted to the FDIC, May 11, 1990.

15. The statute provides that a member that is not a qualified thrift lender may only receive an advance if it holds stock in its Bank at the time it receives the advance in an amount equal to at least five percent of the member's total advances, divided by the member's actual thrift investment percentage. Therefore, the greater an institution's percentage of mortgage-related holdings, the lower the amount of stock required to be held against advances. Members that meet the QTL test must purchase additional capital when the level of advances exceeds 20 times their capital stock.

16. The Oversight Board of the RTC provided this information, which was compiled from the balance sheets of insolvent thrifts.

17. CEBA limited FICO issuances to $3.75 billion annually.

18. As of April 16, 1990, the Banks had contributed approximately $2.8 billion to FICO and REFCORP. Of this, $680 million was used to purchase FICO capital stock and $2.12 billion went to REFCORP and the RTC.

19. The Office of Finance calculated the Bank System's gap on an aggregate basis for the purposes of this study. Its analysis is not used as an interest rate risk management tool, but it does provide an indication of the Bank System's overall risk exposure. The maturity gap analysis includes the effect of swaps but does not include the impact of hedging in the futures and options markets, so the effect of the Bank System's overall hedging activity is somewhat understated.

20. By conventional accounting, this number suggests that a 100 basis point decrease in interest rates would cause about an 8 basis point drop in the System's return on assets.

21. Duration of equity is the same as the duration of a fixed-coupon perpetual bond. Duration is additive in that a Bank with a duration of 2 years is exposed to twice as much interest rate risk as a Bank with a duration of 1 year. The change in market value of equity for a given change in interest rates approximates the following: MVE x [-DGE/(1+i)] x change in i.

MVE = market value of equity
DGE = duration gap of equity
i = interest rates

22. Under 12 U.S.C. 1426(b)(1), "If the Bank finds that the investment of any member in stock is greater than that required under this subsection it may, unless prohibited by said Board or by the provisions of paragraph (2) of this subsection, in its discretion and upon application of such member retire the stock of such member in excess of the amount so required." Paragraph 2 states that a Bank may not redeem capital if it would cause the member's advances to exceed 20 times its capital stock.

With respect to the redemption of stock, when a member leaves the Bank System, if any financial institution's membership in a Bank is terminated, the indebtedness of the member to the Bank shall be liquidated in an orderly manner (as determined by the Bank), and, upon completion of such liquidation, the capital stock in the Bank owned by the member shall be surrendered and canceled. See 12 U.S.C. 1426(e).

23. 12 U.S.C. 1422a(a)(3)(D). The FHFB would have statutory authority to issue such regulations under 12 U.S.C. 1422b(a)(1).

APPENDIX D

THE FARM CREDIT SYSTEM

DESCRIPTION

Creation and purpose

The Farm Credit System (System) was created by the Federal Farm Loan Act of 1916. By this act, Congress established the Federal Land Banks (FLBs) to provide a dependable source of agricultural credit at competitive rates. The System was expanded with the creation of the Federal Intermediate Credit Banks (FICBs) in 1923, and the Production Credit Associations (PCAs) and Banks for Cooperatives (BCs) in 1933. The System is currently subject to the provisions of the Farm Credit Act of 1971, as amended[1], with the following policies and objectives:

(1) to furnish sound, adequate, and constructive credit and closely related services to American farmers and ranchers, their cooperatives, and to selected farm-related businesses necessary for efficient farm operations, to improve their income and well-being;

(2) to encourage farmer and rancher borrowers' participation in the management, control, and ownership of a permanent system of credit for agriculture; and

(3) to modernize and improve the authorizations and means for furnishing such credit and credit for housing in rural areas.[2]

Organization

Nationwide network. The System is a nationwide network of lending institutions and affiliated service and other entities. Through its banks and associations, the System provides credit and related services to farmers, ranchers, producers and harvesters of aquatic products, rural homeowners, certain farm-related businesses, agricultural and aquatic cooperatives and rural utilities. On a combined basis, the System had total assets of about $64 billion as of December 31, 1989, and almost $57 billion of publicly traded debt securities outstanding.[3] (See Table 1.)

System institutions in 12 Farm Credit districts service borrowers in all 50 states as well as Puerto Rico. There are Farm Credit Banks (FCBs) in 11 of the 12 districts. These 11 FCBs provide a source of funds as well as supervision and support services to 147 Federal Land Bank Associations (FLBAs), 95 PCAs, 39 Agricultural Credit Associations (ACAs) and two Federal Land Credit Associations (FLCAs)[4], each chartered to serve a specific territory. (See Charts 1 and 2.)

Table 1
Farm Credit System
Selected Financial Data

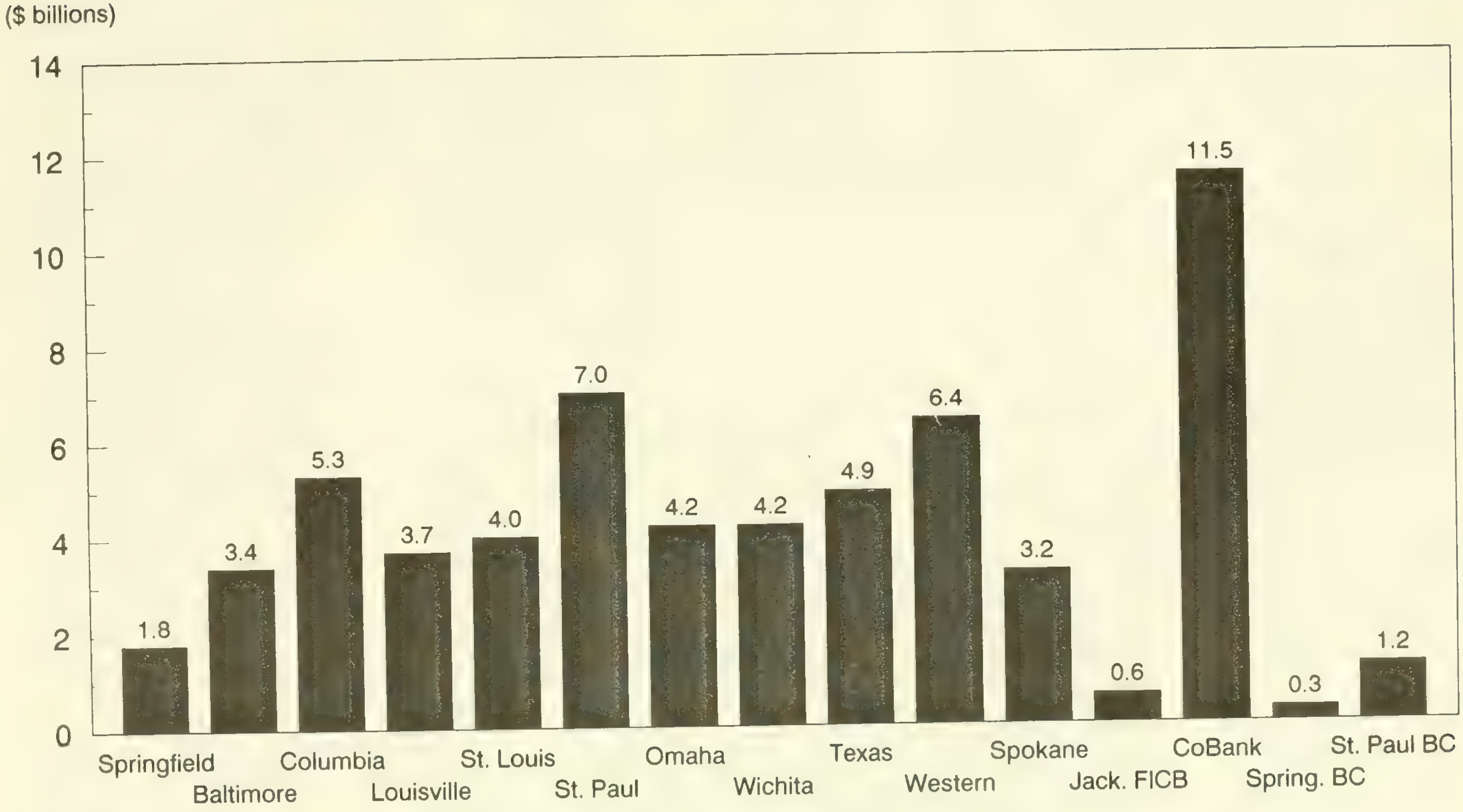
($ millions, year-end)

	1985	1986	1987	1988	1989
Combined Statement of Condition					
Assets:					
Gross loans	69,805	58,249	52,498	51,428	50,707
Allowance for loan losses	(3,190)	(3,635)	(2,951)	(1,858)	(1,578)
Cash & Investments	8,329	11,413	9,408	8,941	11,509
Other Assets	4,889	4,073	3,282	3,105	2,966
Total Assets	79,833	70,101	62,238	61,616	63,604
Liabilities:					
Consolidated Debt	68,851	62,478	55,275	53,933	55,896
FAC Bonds	--	--	--	688	843
Other Liabilities	2,612	1,981	1,934	1,584	1,234
Protected Borrower Capital	--	--	--	3,289	1,683
Total Liabilities	71,463	64,459	57,209	59,494	59,656
Capital:					
Capital Stock	4,969	4,188	3,684	227	1,117
Retained Earnings	3,401	1,453	1,346	1,785	2,291
Total Capital	8,370	5,641	5,030	2,012	3,408
Combined Statement of Operations (for the year)					
Interest Income	8,974	7,169	5,783	5,822	6,270
Interest Expense	7,679	6,389	5,274	5,035	5,264
Net Interest Income	1,295	780	509	787	1,006
Provision for Loan Losses	2,969	1,798	(196)	(681)	(285)
Net Interest Income after Provision for Losses	(1,674)	(1,018)	705	1,468	1,291
Other Income	152	129	97	122	148
Other Expenses	1,183	1,038	803	841	678
Provision for Income Taxes	(16)	(13)	17	44	66
Net Income	(2,689)	(1,914)	(18)	705	695

Source: Farm Credit System Annual Information Statements.

Chart 1

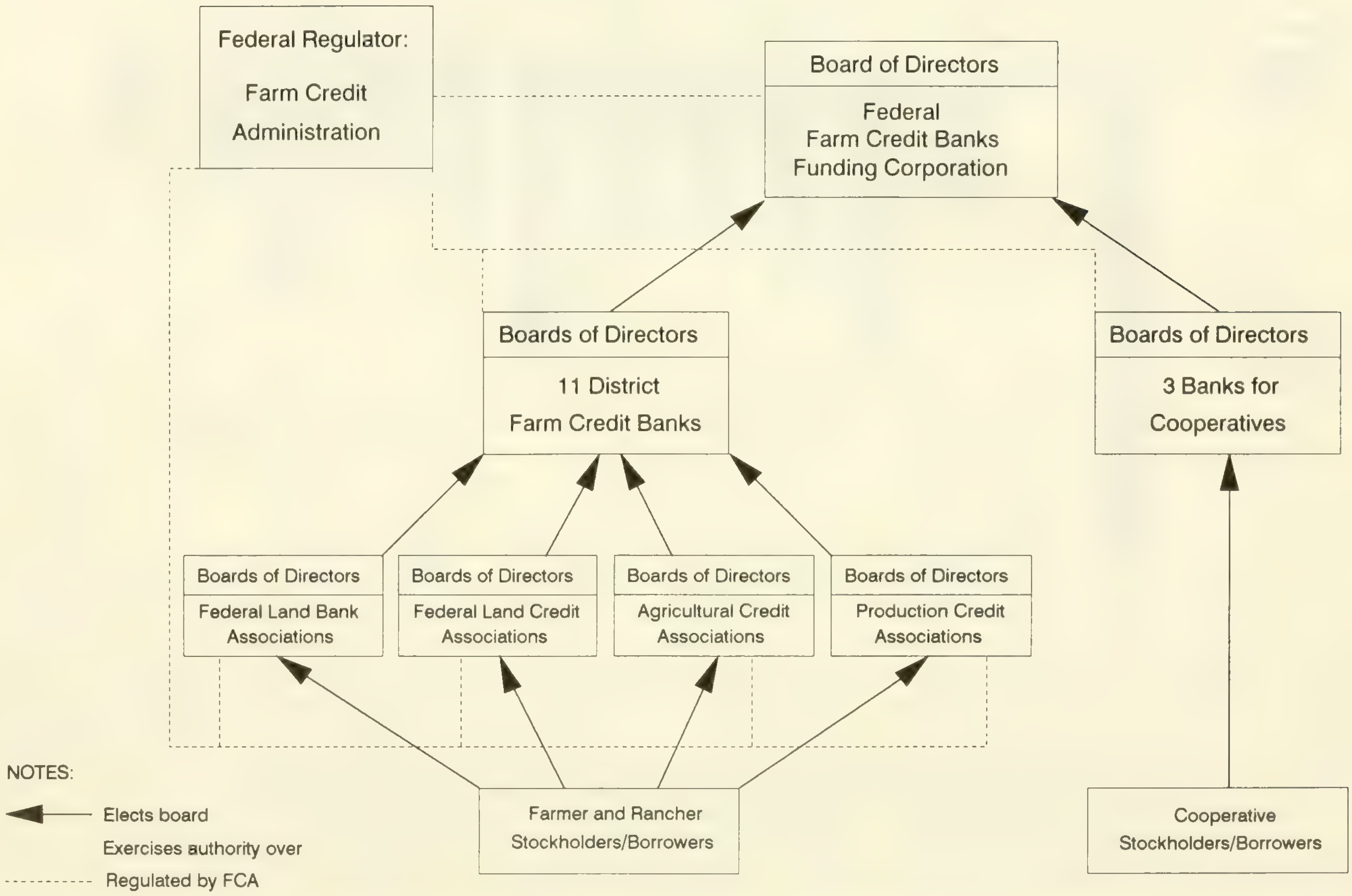
Total Assets of Farm Credit System Banks



Source: Funding Corporation Analysis of Farm
Credit System Financial Results and
Condition as of September 30, 1989

Chart 2

The Farm Credit System


Federal Regulator:
Farm Credit Administration
Board of Directors
Federal Farm Credit Banks Funding Corporation
Boards of Directors
11 District Farm Credit Banks
Boards of Directors
3 Banks for Cooperatives
Boards of Directors
Federal Land Bank Associations
Boards of Directors
Federal Land Credit Associations
Boards of Directors
Agricultural Credit Associations
Boards of Directors
Production Credit Associations
Farmer and Rancher Stockholders/Borrowers
Cooperative Stockholders/Borrowers
NOTES:
Elects board
Exercises authority over
Regulated by FCA

Farm Credit Banks. FCBs make long-term mortgage loans to farmers and ranchers for land and other assets through the FLBAs, and provide funds for FLCAs, PCAs and ACAs. FLBAs originate and service loans for the district FCB, which is the direct lender. FLCAs are associations (formerly FLBAs) to which direct long-term lending authority has been transferred by the FCB in their respective district. PCAs make short- and intermediate-term loans to farmers and ranchers. ACAs are associations created by the merger of one or more FLBAs and PCAs and have direct short-, intermediate- and long-term lending authority.

Banks for Cooperatives. Three BCs, each with a national charter, offer credit and leasing services to agricultural cooperatives, rural utility systems and other eligible customers. The National Bank for Cooperatives (CoBank) is headquartered in Denver, and maintains regional offices in 10 Farm Credit districts. CoBank also finances agricultural exports and provides international banking services for the benefit of U.S. farmer-owned cooperatives. The other two BCs have headquarters in St. Paul, Minnesota and Springfield, Massachusetts.

Cooperative ownership. The banks and associations are cooperatively owned by their respective borrowers. This means that a borrower must be a stockholder of the System institution from which the borrower receives a loan. Thus, borrowers/stockholders own their associations, and the associations jointly own the FCB in their respective districts.

The borrowers/stockholders elect the boards of directors of their local associations. The association boards in turn elect the directors to the boards of their district FCB; these directors elect one additional outside director. CoBank's board of directors consists of three directors (elected by the stockholders) from each of 10 Farm Credit districts; one director from each of the 2 districts not affiliated with CoBank; and one non-System director elected by the other directors. The boards of directors for the St. Paul and Springfield BCs are elected by their stockholders.

Financial Structure

System institutions do not take deposits from their borrowers.[5] They are funded principally through the sale of Systemwide debt securities that are the joint and several obligations of the banks (FCBs and BCs). The Federal Farm Credit Banks Funding Corporation (Funding Corporation) is the System's fiscal agency, responsible for issuing and marketing these securities. The Funding Corporation is located in New York City and manages a selling group of approximately 115 investment dealers and dealer banks which offer Systemwide debt securities. This selling group distributes these debt securities to all types of investors, including commercial banks, savings and loan associations, individuals, insurance companies, states and municipalities, pension and money-market funds, foreign banks, and foreign governments.

In addition to its other duties as fiscal agent for the banks, the Funding Corporation has the responsibility for determining, subject to FCA approval, the amount, maturities, rates of interest, terms and conditions of participation by the banks in each issue of Systemwide debt securities and provides certain other financial advisory services. The System is required to consult with the Treasury department before issuing any obligation.[6]

Consolidated Systemwide Notes. As the joint and several obligations of the banks, the Consolidated Systemwide Notes are backed by the combined financial resources of all the banks. These notes, which are sold on a discount basis with maturities of five to 365 days, provide a source of interim funds between bond sales, and supply the banks with flexibility in securing funds.

Consolidated Systemwide Bonds. Consolidated Systemwide Bonds are also the joint and several obligations of the banks. They are typically issued at fixed interest rates and, subject to the funding needs of System institutions, are publicly offered up to sixteen times a year under the agency financing calendar. Normally, bonds with maturities of three months, six months and one year are offered every month and other maturities are offered periodically throughout the year. In addition, direct placements of new and existing issues are made to institutional investors as bank needs and market conditions warrant. From time to time, offerings are made of bonds having special terms such as variable interest rates or early redemption features.

Business Activities

Long-term real estate loans. The 11 FCBs, the ACAs and the FLCAs make long-term real estate loans secured by first mortgages on farm and rural real estate. These loans are made for a variety of purposes, including:

(1) the purchase of farms, farmland, machinery, equipment and livestock;

(2) the refinancing of existing mortgages and payment of other debts;

(3) the construction or repair of buildings;

(4) the improvement of land;

(5) the financing of other farm-related needs;

(6) the purchase of real estate needed for aquatic operations and for the purchase of processing and marketing facilities;

(7) certain farm-related businesses; and

(8) rural home loans.

Long-term real estate loans have maturities ranging from five to 40 years. Loans generally can be made in amounts up to 85 percent of the appraised value of the property taken as security, valued at the time the loans are made, or up to 97 percent of the appraised value if guaranteed by a state, Federal or other governmental agency. The FCA may require by regulation that these loans not exceed 75 percent of the appraised value of the security.

Short- and intermediate-term loans. The 11 FCBs and the Jackson FICB[7] provide short- and intermediate-term loan funds to the PCAs and ACAs and to certain other financial institutions serving agricultural producers. PCAs and ACAs make loans to farmers, ranchers, rural homeowners, producers and harvesters of aquatic products and certain farm-related businesses. Loans are also made to finance the processing and marketing activities of farmers, ranchers and commercial fishermen. Most loans are made for production or operating purposes and mature within a year. However, farm and rural home loans may have terms of up to 10 years, and loans to producers or harvesters of aquatic products may be made for up to 15 years.

Loans to cooperatives. The three BCs make loans to agricultural and aquatic cooperatives and to rural utilities on a nationwide basis. BCs also provide credit and related services to borrowing cooperatives in connection with international transactions. The BCs make loans to such cooperatives and utilities for the purpose of financing seasonal and long-term capital requirements. These loans made by BCs may be made on either an unsecured or a secured basis; long-term loans are generally secured.

Secondary mortgage market securities. The Agricultural Credit Act of 1987 created the Federal Agricultural Mortgage Corporation (Farmer Mac). When authorized by Farmer Mac, System institutions may issue securities representing interests in or obligations backed by pools of qualified loans. Farmer Mac has yet to authorize any institution to issue such securities.

Relationship to the Federal Government

Regulatory oversight. As federally chartered institutions, the banks and associations of the System are regulated and examined by the Farm Credit Administration (FCA), an independent agency of the U.S. Government. The FCA is managed by a full-time board consisting of three members appointed by the President with the advice and consent of the Senate.

The Farm Credit Act authorizes, and in some instances requires, the FCA to issue regulations governing various operations of System institutions. Additionally, the Farm Credit Act requires the FCA to examine each System institution not less than once each year (except FLBAs, which are required to be examined at least once every five years). Such examinations include analyses of credit and collateral quality, capitalization, effectiveness of management, and application of policies in carrying out the Farm Credit Act and in adhering to FCA regulations.

The FCA is charged with ensuring the safe and sound operations of System institutions. The FCA's enforcement powers, which generally parallel those of other Federal financial institution regulators, include the power to:

- issue cease-and-desist orders;
- initiate proceedings to remove a director or officer of a System institution; and,
- impose specified civil money penalties for certain violations of the Farm Credit Act, or of regulations or certain orders of the FCA.

Other government links. The System's debt securities are exempt from SEC registration and are treated as Government securities for purposes of the Securities Exchange Act of 1934. They may be accepted by the Federal Reserve Banks as collateral security for advances to depository institutions, and are eligible for outright purchase and sale by the Federal Reserve System in its open market operations. Acting as a clearing agent, the Federal Reserve Banks maintain accounts for each of the banks.

National banks and state member banks of the Federal Reserve System may invest in System debt obligations and, in doing so, are not subject to the statutory limitations and restrictions generally applicable to dealing in, underwriting and purchasing investment securities for their own account. In particular, the limitation that such banks shall not invest more than 10 percent of their capital stock and surplus funds in the securities of one obligor does not apply to the System's debt securities. The securities are also lawful investments for Federal credit unions and Federal savings and loan associations.

The Farm Credit Act provides that the System's debt securities are lawful investments for all fiduciary and trust funds under the jurisdiction of the U.S. Government, and are eligible as collateral for U.S. Government deposits. Finally, interest on Systemwide debt securities is exempt from state and local -- but not Federal -- income taxation.

Government Bailout of the Farm Credit System

As the Agricultural Credit Act of 1987 made clear, the activities of government sponsored enterprises can involve real costs to the Federal Government and to the American taxpayer. By failing to manage adequately the risks of its activities, the System sustained severe losses that ultimately required the infusion of Federal funds. This section will describe the conditions that led to the System's problems, as well as the legislation enacted to clean the problems up.

Agricultural sector during 1970s and 1980s. The U.S. agricultural sector in general, and the Farm Credit System in particular, experienced a sustained period of crisis during the 1980s. This experience, however, was immediately preceded -- and partially caused -- by the agricultural boom of the 1970s. Sharp increases in agricultural prices during the 1970s were caused by, among other things, the declining value of the dollar on international currency markets, the increased demand for food in foreign countries, and the elimination, in 1972, of the huge U.S. government commodity surpluses that had accumulated during the 1960s.

Higher commodity prices, along with rapid inflation in 1973-1974 and again in 1978-1980, resulted in sharp increases in the price of farmland. The higher commodity prices (and negative real interest rates during much of this period) encouraged many farmers to increase their debt loads and expand operations. Although the increase in the price of land satisfied collateral requirements on loans, many farmers could not cover the cash flow requirement on the new debt.

These conditions did not prevail in the 1980s, however. The value of the dollar rose, other countries increased their agricultural output, the worldwide recession reduced demand for U.S. exports, and record U.S. crops in 1981, 1982 and 1985 all combined to depress commodity prices. The resulting sharp decline in farmland values put severe financial pressure on over-leveraged farms. Farmer bankruptcies increased and the amount of total farm debt began a prolonged contraction.[8]

Farm Credit System response. The System's traditional approach to loan pricing was relatively simple. Loans were priced to meet a target spread over the banks' average cost of funds. There were only two loan rates -- one for real estate loans and one for non-real estate loans. All borrowers paid the same rate, independent of their credit quality. The rates paid by borrowers were also independent of when they borrowed. Loan pricing was thus based upon an average, rather than marginal, cost of funds.

To support this loan pricing approach, System banks borrowed long-term at fixed rates to lock in their costs of funds. During the volatile interest rate environment of the 1980s, this allowed the banks to keep their loan rates relatively stable. When interest rates were particularly high in the early 1980s, the banks' rates -- which lag behind a rate tied to the marginal cost of funds -- were much lower than alternative sources of agricultural credit, and resulted in significant gains in market share for the System. Of course, when interest rates declined in the 1980s, the average cost pricing (and long-term funding) that had kept the banks' rates below rising market rates kept them above falling market rates. (See Charts 3 and 4.)

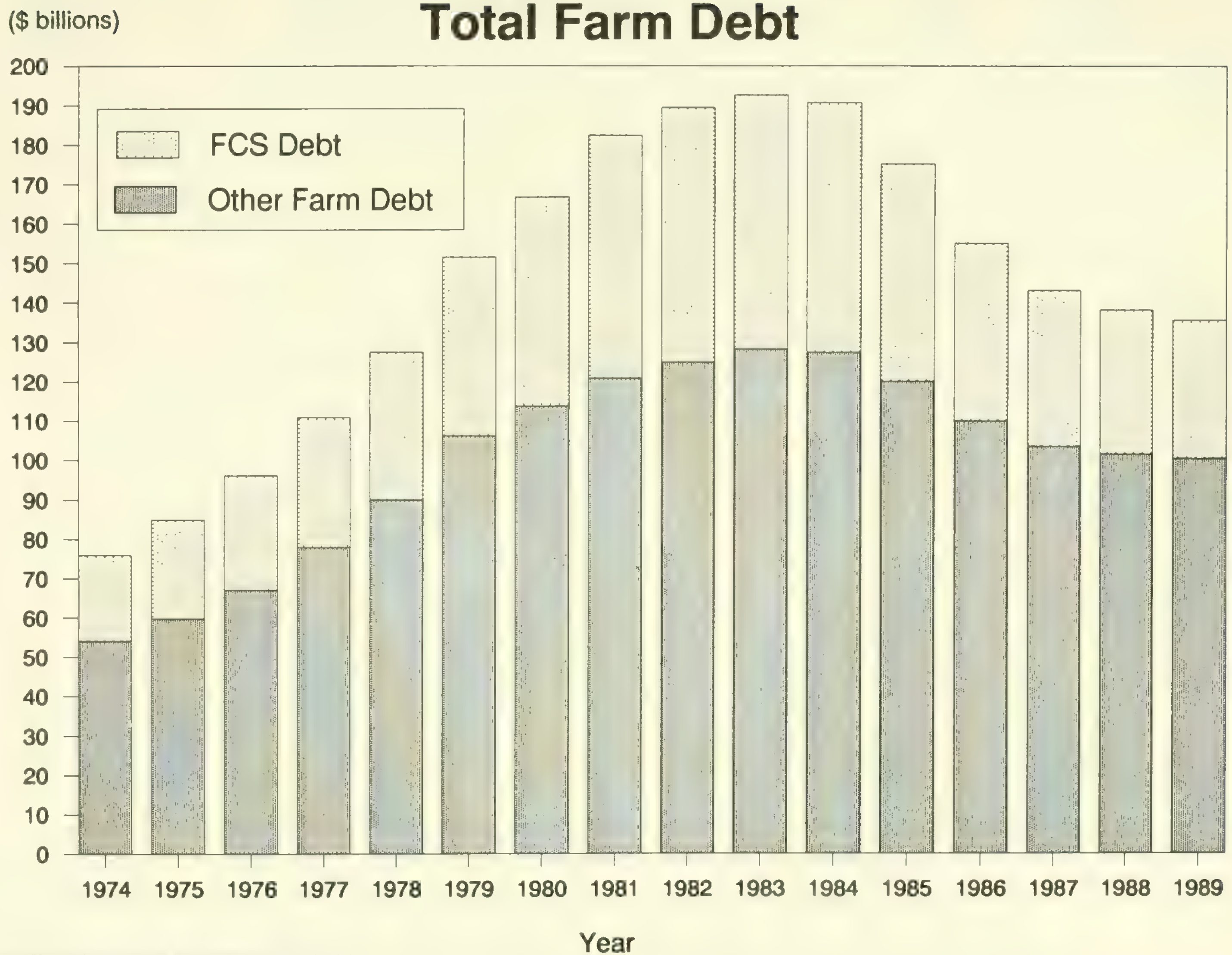
With rates now above the competition's, the System's loan volume shrank faster than the decline experienced in agriculture as a whole. Saddled with its existing high-cost funds and declining loan volume, the System was in a precarious situation. The FCA, which at the time had prior approval authority over interest rates charged by System institutions, did not allow the System to lower loan rates because the banks' margins and capital levels would have suffered. However, high quality borrowers had other options; they could leave the System for lower rates from other lenders. Thus, the System's average cost pricing, anathema to managing interest rate risk, ultimately contributed to a more severe credit quality decline than that experienced by some other farm lenders. (See Chart 5.)

Agricultural Credit Act of 1987. The Agricultural Credit Act of 1987 (the Act)[9] was enacted on January 6, 1988 in response to the System's financial problems. The primary purpose of the Act was to establish mechanisms to provide financial assistance to troubled System institutions.[10] The Act chartered the Farm Credit System Assistance Board (Assistance Board) to oversee assistance to eligible System institutions, and the Farm Credit System Financial Assistance Corporation (FAC) to provide funds for financial assistance through the issuance of securities.

The Act provided FAC with the authority to issue 15-year bonds up to an aggregate amount of $4 billion for assistance to System institutions. The payment of the principal and interest on these bonds is backed by the full faith and credit of the United States Government. The bonds must be issued no later than

Chart 3

Total Farm Debt

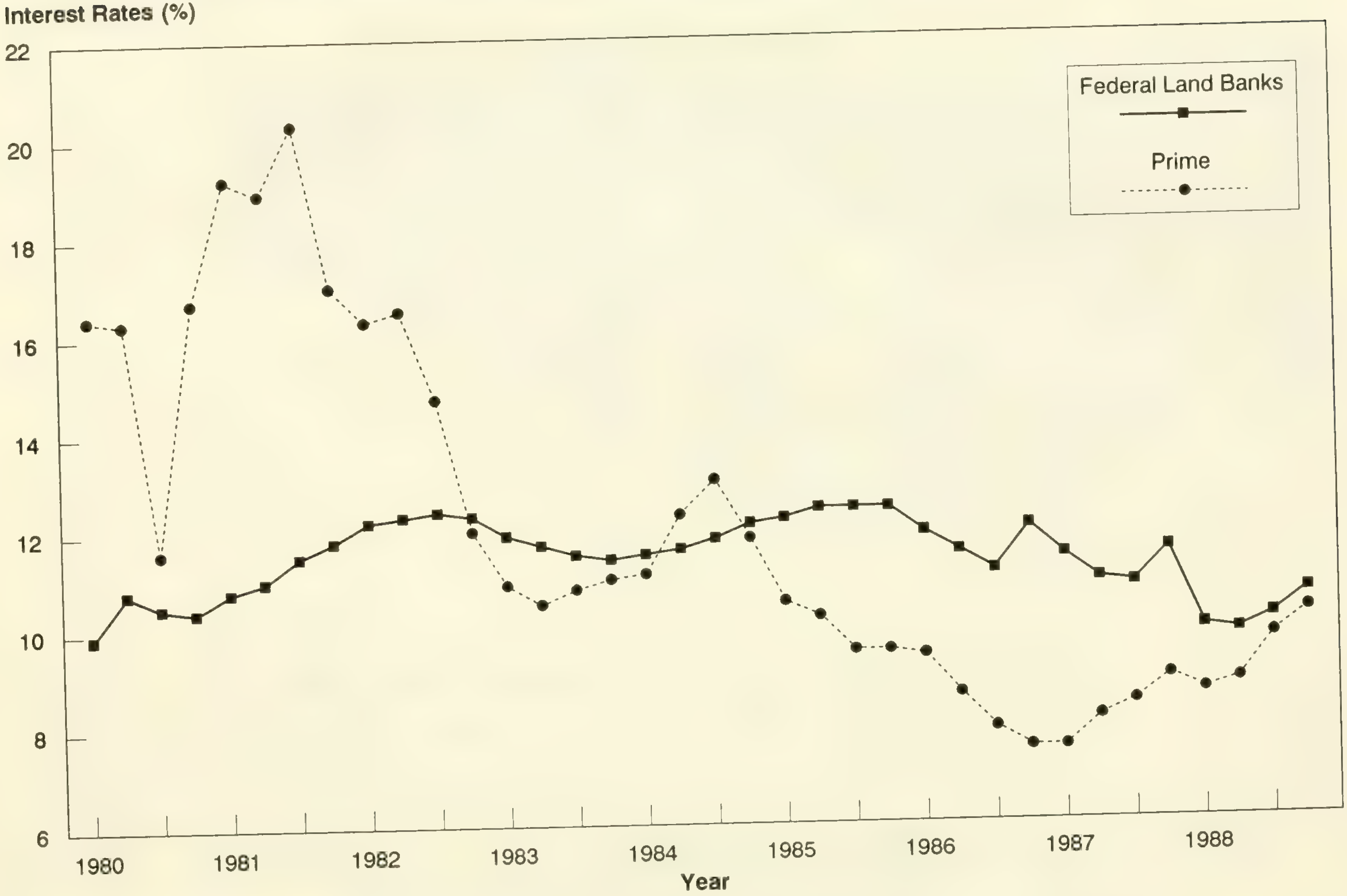


Note: Total farm debt excludes households.

SOURCE: USDA Agricultural Income and Finance Situation and Outlook Report, 1990

Chart 4

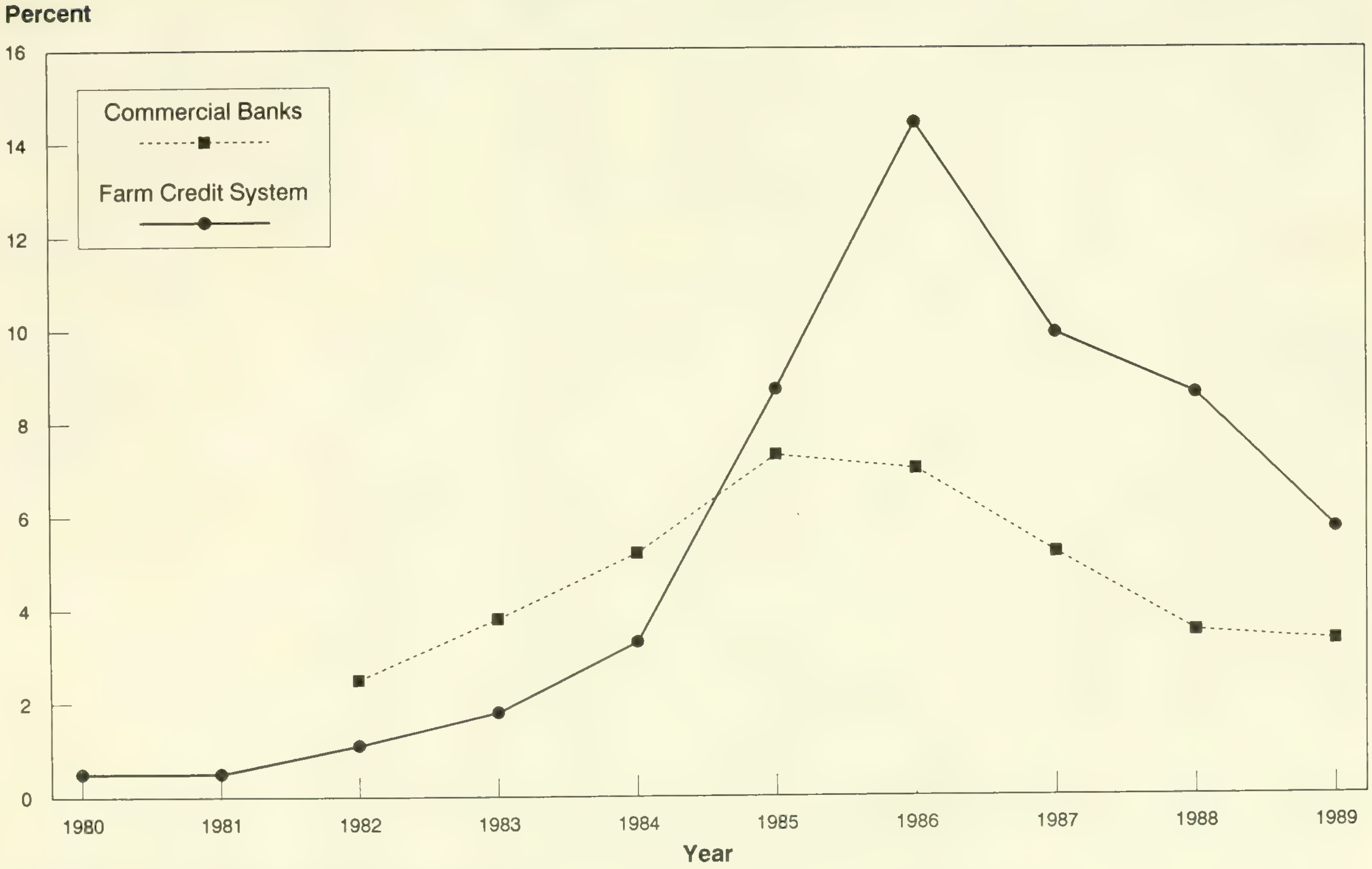
FCS Interest Rates on Real Estate Loans vs. Prime



SOURCE: USDA Agricultural Income and Finance Situation and Outlook Report, 1989.

Chart 5

Delinquent Farm Loans



Note: Delinquent loans as a percentage of outstanding loans.
Numbers for commercial banks include only farm, not total, loans.

SOURCE: USDA Agricultural Income and Finance Situation and Outlook Report, 1990.

September 30, 1992. The Treasury pays the interest on the bonds for the first five years, splits equally with the System the interest for the next five years, and the System pays all the interest for the last five years. Although the System is required to pay the principal amount of the bonds upon maturity (as well as repay all interest payments made by Treasury), on a present value basis the System will repay considerably less than the amount of assistance it receives.

The Assistance Board, whose directors are the Secretary of Agriculture, the Secretary of the Treasury, and an individual appointed by the President, is responsible for determining whether to grant requests for financial assistance from qualified System institutions. As an alternative to providing financial assistance to a System institution that is a going concern, the Assistance Board may ask the FCA to appoint a receiver for the troubled institution, direct the FCA to appoint a conservator, or it may request the FCA to require a merger of the institution with another System institution.

The Assistance Board has broad powers with regard to an institution that requests assistance. These powers include prior approval authority over the institution's business plans, operating policies, debt issuance and certain personnel matters. The Assistance Board may also suspend or terminate assistance to an institution that substantially deviates from the terms and conditions imposed pursuant to these powers. The authorities of the Assistance Board terminate on December 31, 1992.

During its first two years of operation, the Assistance Board provided about $330 million of assistance to three banks (Louisville and Omaha FLBs, and St. Paul FCB). The Assistance Board is also considering assistance to fund the liquidation of the Jackson FLB.

FINANCIAL SAFETY AND SOUNDNESS OF THE FARM CREDIT SYSTEM

In order to assess the financial safety and soundness of the Farm Credit System, the degree of risk involved in the System's operations due to such factors as business risk, credit risk, interest rate risk, and management and operations risk, and the System's capital were examined. In addition, the quality and timeliness of information currently available to the Federal Government and the public concerning the System's operations and the financial risks associated with such operations were assessed. The results of these analyses follow.

Business Risk

Overview

Business risk may be the single most important risk faced by the Farm Credit System. Like other GSEs, the System is limited to lending to a single business sector. The undiversified portfolios of System institutions are subjected to additional pressure because the agricultural sector is extremely volatile. System institutions are further restricted in their ability to diversify risk because they are limited by charter to providing credit within specified regions. A bank's performance can rise and fall with the fortunes of a single crop or perhaps with those of a limited number of borrowers.

These limitations, as well as changes in the credit markets generally, have left the System increasingly vulnerable to its competition. Commercial banks, which have benefited from deregulation and consolidation, have just recently displaced the System as the largest source of agricultural credit. It is not clear that the System will be able to stop this trend.

Finally, because the System is dependent upon agriculture, a heavily subsidized industry, it is particularly vulnerable to legislative changes. The acreage reduction and commodity price support programs as well as various export programs all contribute heavily to farmers' incomes and directly affect the System's performance.

Sources of Risk

The Farm Credit System must contend with business risk from the following four sources:

(1) Industry concentration;

(2) Geographic concentration;

(3) Competition; and

(4) Legislation/regulation.

This section describes these risks and the risk management tools employed by the System, concluding with a general assessment of the System's exposure to business risk.

Industry concentration. Limited by charter to lending for agriculture-related purposes, the System's performance is tied to that of the volatile agricultural sector, creating obvious problems for diversifying risk.

Farm borrowers generally need financing for long term real estate holdings, shorter term financing for machinery and equipment, and annual or crop-year financing for current production needs. The traditional agricultural credit market, characterized by small, specialized operations, low profit margins and uncontrollable natural production risks, led to the development of small locally based credit markets requiring close evaluation by a locally based lender serving a small geographical area. The successful lender had a great deal of knowledge of local conditions and farm operations, had specialized relationships with borrowers in a market "niche," and offered flexible loan terms.

During the past several decades, agriculture has changed substantially due to advances in production technology, the increased impact of macroeconomic conditions (e.g., interest rates and worldwide trade shifts) on farm incomes and the increased competition in rural credit markets. These changes are creating a two-tiered structure of agricultural production, consisting of either very small farms (with less than $40,000 in annual sales and off-farm income to support operations and debt) or large-scale commercial farms.

Lending to the small farmer is similar to making non-agricultural consumer loans. The large commercial farms typically have large debt loads to fund advanced technologies that give them efficiencies of scale, yet they are still exposed to the volatility of agricultural income. Lending to them is similar to commercial lending, requiring a lender with a diversified portfolio to ensure earnings stability, a substantial capital base, specialized knowledge of large-scale farm production operations, and the ability to offer low-cost services.

The farm lending market is likely to follow the two-tiered structure of farm production, with an increasing share of farm debt held by the larger, sophisticated lenders. Even among commercial banks, the very largest banks have increased their share at the expense of smaller banks that traditionally specialized in farm lending (though less so than the System).

These institutions have more earnings stability from diversification, and can offer the range of credit services needed by larger borrowers. Competition from these larger diversified institutions is likely to intensify as the size of farm operations continues to increase.

In the near future, the principal farm debt markets are likely to grow slowly. Because the U.S. farm production markets are characterized currently by excess capacity, farmers will likely focus less on debt-intensive activities and more on cost reduction and product innovation to increase income.

In this changing market environment, the System's single-sector lending limitation may become a significant liability. To be competitive, the System will need to offer a wide range of low-cost credit services, requiring earnings stability and capital growth in a business environment conducive to neither.

Geographic concentration. FCBs are restricted by charter to serving farm credit needs within specific districts.[11] The banks serve farm borrowers and associations throughout the district, and the associations provide credit to producers located in specified regions within the district. Although the banks and associations may purchase participations from other districts, the volume of such participations has been extremely low.

Thus, the charter provides a real limit to the credit markets of the individual FCBs, and the credit markets in each district are shaped by the production characteristics of that district. Regional differences in land characteristics, climate, population base and access to markets contribute to a great deal of diversity in agricultural production across the districts, though not necessarily within districts.

Two examples will illustrate the extent to which a district's agriculture and credit markets are shaped by regional considerations:

1) The northeast is a highly metropolitan region. Its land characteristics favor small farms and a broad mix of products. Issues of particular concern in this region include competition with nonfarm uses of land, rising transportation costs and environmental considerations. Farm credit needs are influenced substantially by off-farm income and by collateral values reflecting potential urban use. Many of the region's crops are not supported by federal commodity programs, and there is no significant trend toward large farms.

2) By contrast, the great plains areas contain farms of increasingly large average size that are exposed to wide variations in climates. In addition, there is not a great

deal of crop diversity, so problems in only one crop can significantly affect a district bank. Soil erosion and water resources are important regional and federal concerns and represent significant risks of unknown size. The crops grown in the region are major export commodities, subject to significant changes from trends and fluctuations in the relative value of the dollar and world trade problems. Because these crops are also the focus of federal commodity programs, any change in these programs can create major variations in income and debt in this region.

Clearly, the extent to which a System bank can diversify its loan portfolio is at least partly a function of the characteristics of its district. Any comparable limitation for large commercial banks is not as onerous because of their non-agricultural diversification.

Competition. The competitive environment for agricultural lending constitutes one of the most pressing business risks for System banks. Total agricultural debt in 1989 was about $136 billion, with the System accounting for about $35 billion, or 26 percent.[12] Other major holders of farm debt include commercial banks ($44 billion), insurance companies ($9 billion), the Farmers Home Administration ($20 billion), and merchants and other extenders of credit ($28 billion).

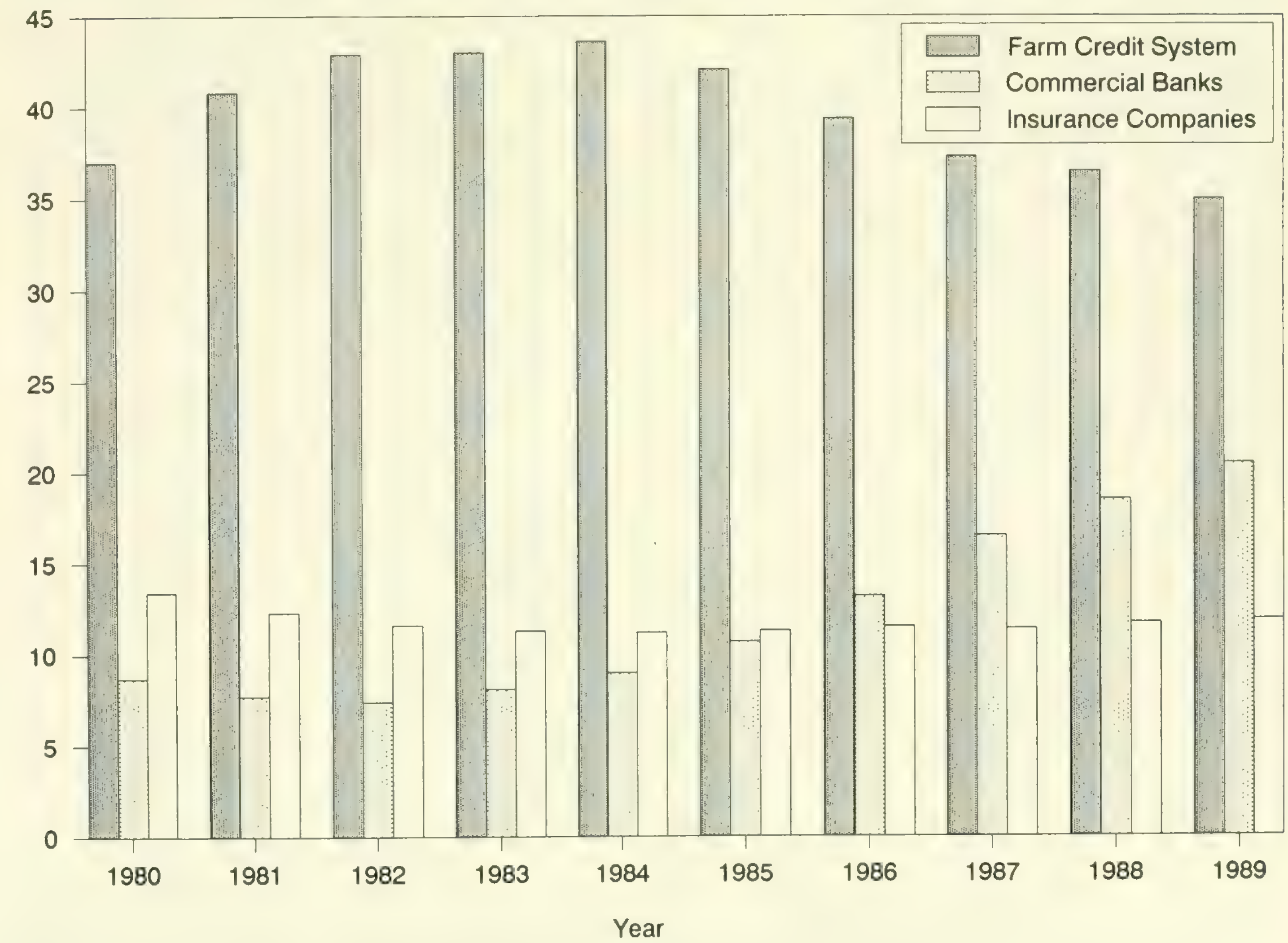
Commercial banks are now the largest suppliers of farm credit. They can offer a broad range of services to farmers to attract good borrowers, and are thus the System's primary competitors. They dominate the short- and intermediate-term lending market, and have increased their share of mortgage lending. Life insurance companies are another source of competition for agricultural mortgages, although farm loans are a small percentage of insurance companies' total assets. Insurance companies do not have a presence in the non-real estate segment of the market. Finally, FmHA occupies its own market niche as the "lender of last resort" in the agricultural sector, with one of its primary functions to keep farmers on the farm.

Although the System's single-sector lending poses obvious diversification problems, there may also be some benefits. The System may have an advantage over its competitors in attracting borrowers because it will provide a source of agricultural credit in both good times and bad. In addition, the System clearly has a great deal of knowledge and experience making agricultural loans.

As discussed in the sections on industry and geographic concentration, traditional agricultural lenders have been hurt by their lack of diversification. As Charts 6 and 7 show, the System lost significant market share during the farm recession

Chart 6

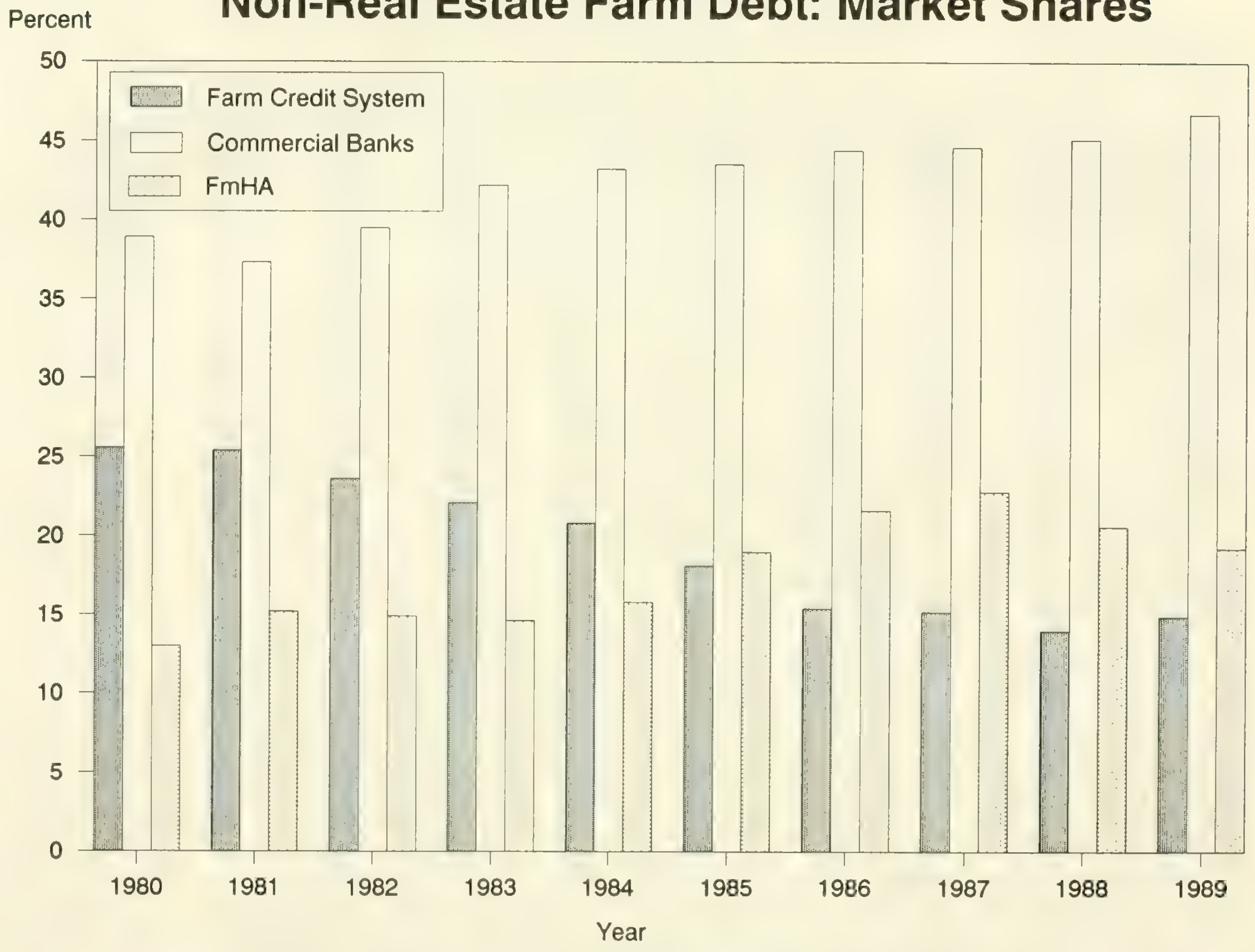
Real Estate Farm Debt: Market Shares



SOURCE: USDA Agricultural Income and Finance Situation and Outlook Report, 1990

Chart 7

Non-Real Estate Farm Debt: Market Shares



SOURCE: USDA Agricultural Income and Finance Situation and Outlook Report, 1990

and recovery of the 1980s. That the System lost market share to commercial banks in both real estate and non-real estate debt indicates the severity of its problems. Although this downward trend has stabilized somewhat, the possibility of continuing to lose market share going forward is the focus of considerable System attention.

A number of factors unique to commercial banks will undoubtedly exacerbate the competitive pressures on the System:

(1) Agricultural banks, which have nearly completed their recovery from the farm crisis of the mid-1980s, are well positioned to extend credit;

(2) Bank consolidation, including mergers across state lines, is expected to continue. This would result in fewer, larger banks with wider geographic range; such banks would enjoy increased efficiency, as well as greater opportunities for diversifying risk; and

(3) Large nonagricultural commercial banks are likely to continue to increase their share of total agricultural debt.

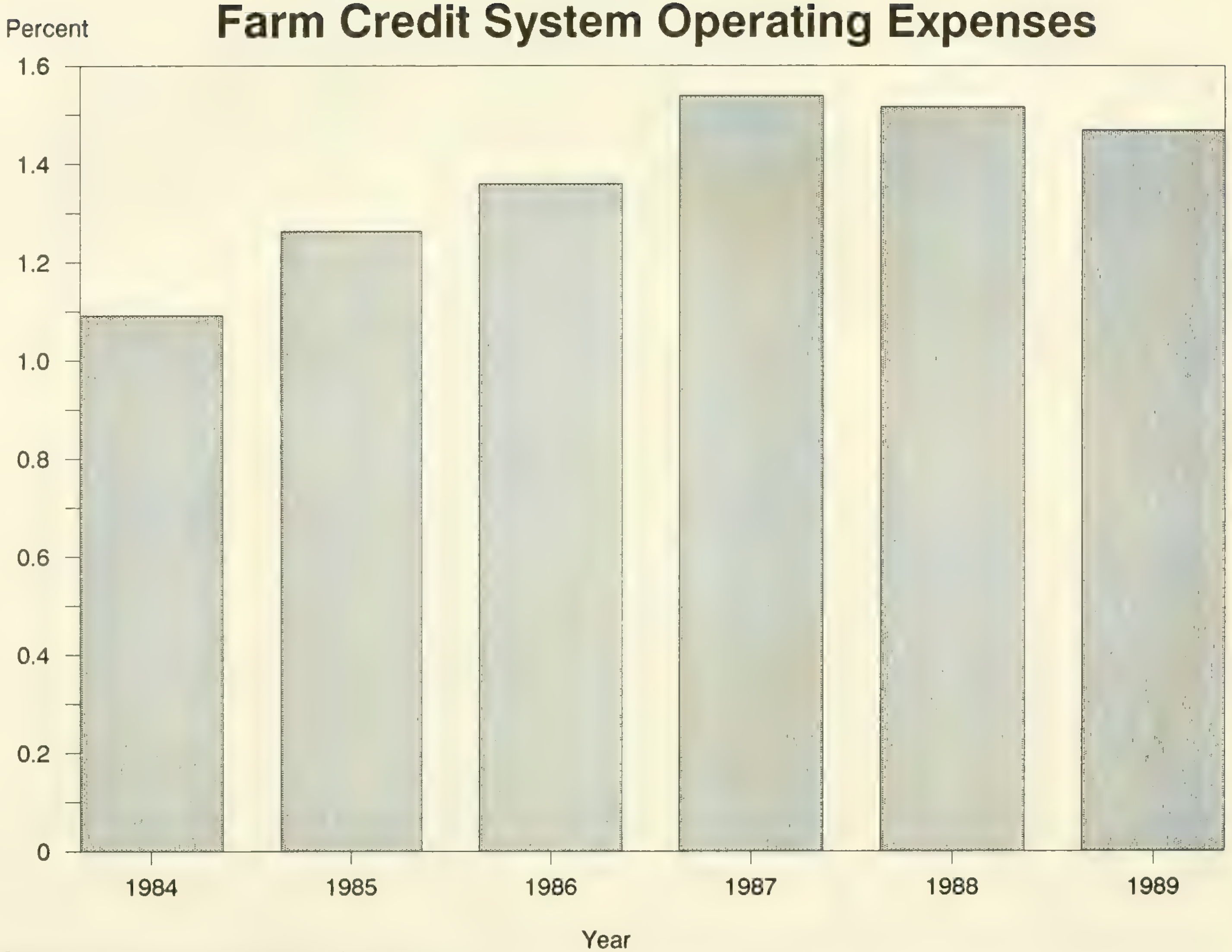
Several other factors could create even more competitive pressure for the System. Both commercial banks and insurance companies, which are already the System's major competitors for real estate loans, may benefit considerably from Farmer Mac. Non-traditional lenders such as farm suppliers may also become more significant factors in agricultural lending.

Operating expenses for System institutions are probably not as low as they need to be for the System to compete effectively in the future. Chart 8 shows how the System's operating expenses increased after 1984. Although much of this increase can be attributed to the System's declining loan volume over this period, as well as the expenses associated with restructuring many loans, there is still significant room for improvement. Such improvement is particularly important now that System banks must pay about 15 basis points in premiums each year for the Farm Credit Insurance Fund.[13] Although this amount is consistent with insurance premiums paid by commercial banks,[14] the System's principal competition, it is a new source of expense for System institutions, and will have to be incorporated into their pricing structures.

Legislation/Regulation. System banks are dependent upon a heavily subsidized industry for their cash flow. Government payments contributed over 60 percent of net farm income in one district in 1987, and were still about 50 percent in 1989. Clearly Federal legislation can significantly influence the System's financial performance from year to year.

Chart 8

Farm Credit System Operating Expenses



Note: Operating Expense as a percentage of total loans

SOURCE: Farm Credit System Annual Information Statements

In 1990, Federal budget constraints and a market oriented Administration may produce a 1990 Farm Bill with moderately lower levels of government support. Congress may focus instead on non-budgetary resources for rural America, perhaps in the form of broader System authorities for agribusiness and rural development lending. Other potential legislative developments that might affect System borrowers include food safety programs, as well as environmental programs with special emphasis on water quality, pesticide use and soil erosion.

As the System's regulator, the FCA potentially affects every aspect of the banks' operations. Since the mid-1980s, the FCA has been evolving, through both legislation and practice, into a role as an "arms-length" regulator. For instance, since the 1987 legislation, the FCA has taken over certain examination functions affecting associations that were previously performed by the district banks themselves. It is likely, given the regulatory climate following the System's problems, as well as those of the thrift industry, that the FCA will become a more aggressive regulator. Recent developments, such as the FCA's implementation of risk-based capital standards, confirm this. The FCA is also currently considering alternatives for controlling interest rate risk in the System, as well as an early warning system for off-site examinations to supplement the information provided during annual on-site examinations.

Business Risk Management Tools

Monitoring and identification of risks. As a part of their annual planning processes, System banks identify and prepare responses to both short-term and long-term changes in their lending environments. To evaluate the effects of changes in the macroeconomy (i.e., interest rates, international trade, and agricultural production), the banks collect information from a number of public and private sources which provide analyses and in some cases projections of impacts on farm lending activities. This information is then reviewed by bank research staff, who develop, in consultation with local branches and associations, projections of the effect of these changes on the performance of farm production entities and the demand for credit in the bank's district.

In varying degrees, the banks analyze current customer needs, and obtain a view of the current market position of the bank and its associations. Many banks collect and analyze statistics on competitor lending operations and market shares. At least one bank reported conducting customer research on an annual basis, so that recent changes in customer needs and the bank's market position can be quantified.

The banks also monitor developments affecting farm programs, as well as any other legislative or regulatory initiatives that may affect the System either directly or indirectly.

All the banks present this material to management of the bank and to the associations during the course of the annual planning cycle. The associations and banks then develop current and projected planning assumptions, business objectives and plans, and financial projections consistent with the economic environmental analysis and expectations for their regions. Alternative scenarios (usually a "pessimistic" and "optimistic" case for demand for agricultural credit and/or interest rates and debt maturity) are developed to analyze possible deviations from the expected scenarios.

The development of economic scenarios is done in conjunction with the development of business objectives and business plans for the forecasting period. The banks document their plans, designate areas of accountability, set targets, and allocate resources to the management areas with accountability. The plans are then re-evaluated on a regular basis to measure progress and incorporate the impacts of unexpected factors.

Response strategies to risks. In their environmental and market evaluations, the banks identify the increasing volatility of agricultural production, the trend toward market segmentation by size of farm operation, and the increasing competitiveness of the farm lending market. In response to these market realities, the banks cite the need to target their products differentially toward credit sectors. Many of the banks intend to develop resources at the bank and local association level to meet the full service credit needs of the larger borrower.

Some of the banks also appear to see the need to provide credit at competitive rates by "streamlining operations," and reducing nonearning assets as quickly as the agricultural recovery allows. Given the risks of agricultural lending, these banks talk in terms of pricing in accordance with risk and servicing costs, building capital through profitable low-cost operations, limiting exposure from individual local operations through intensive monitoring, and continuing to examine restructuring opportunities.

Several banks indicated that the ability to participate in the secondary market for real estate loans may enhance their ability to provide service. Finally, recognizing that Congress may want to provide nonbudgetary resources for rural development, many of the banks want to expand their charter through legislation. Clearly, any expansion of the System's business activities beyond its current areas of expertise is potentially risky, and must be done, if at all, with the utmost caution.

Conclusion and Recommendations

System banks have certainly identified most of the business risks discussed in this section. Having identified these risks, the System should try more fully to integrate these risks into their strategic and financial planning functions. However, given the scope of the business risks posed by industry and geographic concentration, for instance, it is not clear what steps the System might take, short of fundamental structural reform, that would fully address these risks. If the agricultural environment of the 1980s were to be repeated, the System would, in all likelihood, once again experience serious difficulties.

Nevertheless, there are incremental steps that the System can take to reduce its exposure to this potential risk. Every System bank is aware that commercial banks will continue to be their principal competition. Many of the banks emphasize their need to differentiate themselves from commercial banks by marketing a unique line of products, services, and knowledge. But if commercial banks continue to gain market share, the System's margins will likely be squeezed.

As one strategy to enhance their competitive position, a number of System banks have begun to look at ways to reduce operating costs. Since 1987, the System has been undergoing significant consolidation and reorganization of associations; these changes should result in some cost savings. Many associations have merged to serve larger areas; other districts have transferred direct lending authority to their FLBAs, and, in some cases, consolidated short-term and long-term functions (PCAs and FLBAs) in one association (ACA). By making associations direct lenders, an FCB can eliminate redundancy, and become more of a "wholesale" provider of financial services to associations. However, as will be discussed in the credit risk section, giving direct lending authority to associations poses some risks, and will require close scrutiny and careful management on the part of the FCBs.

A number of banks are looking at other ways to reduce costs. For example, several districts have discussed the possibility of merging their FCBs. Other banks have begun to recognize the potential cost advantages of computerized credit delivery systems, management information systems, and other information technologies. It remains to be seen, however, whether System banks will address these issues sufficiently to remain competitive in the future.

We therefore recommend that the System develop a Systemwide plan for remaining competitive in the future. This plan should include the continued consolidation of System institutions, as well as other steps for reducing expenses.

Credit Risk

Overview

As discussed in the business risk section, System institutions are limited by charter to financing agricultural production within specific geographic areas. Because this lack of diversification potentially exposes the System to significant credit risk problems, the management of this risk is critical.

The System's credit quality has improved since the mid-1980s as the agricultural economy has recovered, increasing collateral values and borrower incomes. A number of System institutions improved their ability to manage distressed credits, particularly through their experience restructuring nonaccrual and high-risk loans. In addition, System institutions improved credit operations by introducing differential pricing policies for charging higher rates for higher risk; incorporating cash flow estimates (in addition to collateral values) into credit analysis; and developing a Systemwide program for monitoring various credit measures. Such improvements should help System institutions identify problems and take corrective actions more quickly, thereby reducing the potential strain on earnings and capital from carrying nonearning assets.

However, significant credit risk remains. Implementation of improved credit operations has been inconsistent. For example, some System institutions do not adequately differentiate for risk in underwriting standards and loan pricing. In addition, many of the FCBs are transferring the real estate loan portfolio -- and more decision-making authority -- to direct lender associations. Many of these associations will likely require time to gain the experience needed to apply good underwriting criteria and otherwise manage the attendant risks of mortgage lending.

Sources of Credit Risk

Credit risk in the Farm Credit System will be evaluated from two separate, though related, perspectives. The first involves a review of the policies, procedures and structures that the System uses to manage credit risk. An institution with a poor credit management process is likely to have credit problems. On the other hand, an effective credit management process does not guarantee the elimination of all credit problems. An institution's portfolio may have residual credit problems from a time when credit administration was not particularly good, or credit administration personnel may simply not follow the policies and procedures that have been established. Thus, the second perspective on credit risk involves an evaluation of the risk extant in the System's current portfolio.

Credit Risk Management

In this section,[15] the following five tools for managing credit risk are analyzed:

(1) credit policies and procedures;

(2) credit analysis ability;

(3) differential pricing programs;

(4) lending restrictions; and

(5) loan review.

Credit policies. By statute, System institutions generally may not make real estate loans in which the loan-to-appraised value ratio exceeds 85 percent (or up to 97 percent if guaranteed by a state, Federal or other governmental agency). The banks also have a structured credit review process that is approved at both the management and board levels, and have documented policies for extending credit to farm borrowers. The System is revising its approach to credit management by adopting improved standards of credit analysis that include the cash flow capability of borrowers (in addition to collateral), as well as an assessment of the capital risk associated with particular lending programs.

Associations are required by charter to obtain funds from their district FCB. Associations that are direct lenders must establish bank-approved credit standards for new loans. The FCBs do not have day-to-day control over lending in these direct lender associations, and are thus indirectly exposed to risk. The FCBs use two tools to mitigate this risk:

(1) the General Financing Agreement with each association requires the association to meet certain measures of financial condition and operations to remain in good standing with the bank; and

(2) the FCBs have supervisory authority over the associations in all areas of operations, including association credit risk management.

However, if an association violates the required standards, an FCB's powers are limited to responses such as raising the lending rate charged the association, restricting its borrowing ability, and alerting the FCA to the deterioration. While the FCB can refuse to grant credit to severely troubled associations, such a move effectively forces the association into liquidation, and would therefore be used only in extreme circumstances.

Credit analysis procedures.[16] Credit analysis focuses on specific credit factors to determine the financial and managerial abilities of the borrower. From borrower information, the loan officers evaluate the credit factors (i.e., borrower character, capital, repayment capacity, collateral and loan terms and conditions) and make credit decisions. For large or complex loans, this requires analysis of costs of production, anticipated prices and yields, contingencies and possible incomes.

In 1987, most of the banks adopted the Systemwide Credit Administration Review Program, a credit administration grading system. In this system each institution grades its credit administration and appraisal performance on its loans from A (acceptable) to C (unacceptable). Most banks concurrently adopted an internal credit review program in which banks also review the loan and credit quality performance of associations and compare the associations' loan quality findings with their own to determine how well the associations are able to identify poor quality loans. The banks also defined standards for credit administration performance, appraisal performance, and internal association credit review for comparison purposes.

It should be noted that the banks grade themselves in the Systemwide Credit Administration Review Program; there is no external check on each bank's grading of its own performance. Thus, there is no assurance that an A grade in one district is an A in any other district.

System banks appear to have adequately documented procedures for extending credit. Manuals describe each credit factor in detail and discuss how to analyze them (using balance sheets, income statements, tax returns, etc.), and identify appropriate financial ratios. There are also detailed guidelines on points to consider in performing the loan analysis.

Differential pricing. The Farm Credit Act Amendments of 1986 required the System to take "into consideration the credit-worthiness and access to alternative sources of credit for borrowers"[17] when setting loan rates. In 1987, the System developed a model pricing program containing pricing standards consistent with the 1986 amendments. This program recommends a differential pricing system in which borrowers are classified in at least three tiers, or credit classes, generally separated according to considerations of owner equity, credit history, size of loan, debt service capacity, and collateral position.

The model pricing program contains recommended standards; adoption of these standards by System institutions is voluntary. As a result, there is still a great deal of variation across the System with regard to pricing policies and procedures, as well as the extent to which the banks adhere to their stated policies and procedures. Although most institutions have established differential pricing programs, a number of System institutions continue to charge all borrowers the same rate; for at least one bank, this is stated policy. Even among those institutions that practice differential pricing, some do not charge sufficiently high premiums to cover the costs of lending to the riskier classes of borrowers.[18] For loans to associations that are direct lenders, some FCBs charge different rates depending upon the associations' riskiness; others do not.

Lending restrictions. If farm production in a bank's lending area is limited to a relatively small number of enterprises, that bank's ability to diversify risk is further limited. As discussed in the business risk section, the increasing size and decreasing number of agricultural enterprises is making this a more pressing concern. Even the BCs, with their national charters, have this problem; less than 2000 borrowers account for CoBank's domestic loan portfolio of over $6 billion.

As a result, the FCA limits each institution's loans to any single farm enterprise to a percentage of the institution's net worth. FLCAs are limited to 20% of net worth, PCAs to 50% of net worth; ACAs are limited to 20% of net worth for their long-term loans, and 50% for other loans; FCBs may not extend mortgage loans in excess of 20% of net worth; and the limits on BC loans vary, depending on the type and term of the loan. (Loans from FCBs to associations, however, are unlimited in size.)

These limits represent a relatively large exposure of the institution's capital to a single borrower, particularly in view of the general lack of portfolio diversification in System institutions. However, FCBs and their associations generally have very few loans approaching these limits, at least partly because recent merger activity throughout many districts has created larger institutions able to bear larger exposures to single borrowers. System institutions may also use participation mechanisms with other System institutions to spread the risk exposure from large loans, although the FCA limits the amount of their total loan portfolio System institutions may invest in purchased participations.

Loan review. A comprehensive loan review program should provide management with the ability to monitor asset credit quality, assess trends, determine causes of deterioration, develop corrective action plans, estimate non-earning assets and loan losses, and establish an adequate allowance for loan losses. FCA examinations of assisted banks suggest that these banks generally classify their loans correctly, and identify the risk in their portfolios accurately. However, some difficulties exist in the accounting and classification of restructured loans. In addition, some associations which have recently been converted to direct lenders are having difficulty establishing correct allowances for losses on loans.

Evaluation of System's Portfolio Risk

The above analysis focused on potential credit risk from structures, policies and procedures. This section will focus on actual measures of credit risk in the System's current loan portfolio. System institutions do not generally perform "stress" tests to measure the effects of economic scenarios that might cause a deterioration in the quality of their portfolios. Therefore, this section will use trends in credit ratios, loan classification data and information from FCA examinations to evaluate portfolio risk.

Allowance for loan losses and net loan charge-offs. System institutions are generally required to set aside reserves, consistent with generally accepted accounting principles (GAAP), according to the risk inherent in their portfolios. (System institutions may use historical loan loss rates as one measure of this risk.) These decisions are audited by each institution's external auditor and the FCA.

As of December 31, 1989, the System's combined allowance for loan losses was $1.6 billion, or 3.1% of the System's $50.7 billion in outstanding loans. With only a few exceptions, the credit quality of the banks' portfolios has improved significantly since 1987, primarily due to a healthier agricultural economy and the System's restructuring of many distressed loans. Table 2 presents a number of ratios that illustrate this improvement for the System on a combined basis. Net loan charge-offs, for example, decreased from 2.1% of average gross loans in 1986 to almost nothing in 1989.

Table 2

	1985	1986	1987	1988	1989
Nonaccrual loans/ Gross loans	7.6%	12.1%	10.0%	6.5%	5.0%
Net Charge-offs/ Average loans	1.5%	2.1%	0.9%	0.8%	0.0%
Allowance/ Gross Loans	4.6%	6.2%	5.6%	3.6%	3.1%
Allowance/ Nonaccrual loans	59.9%	51.5%	56.5%	55.9%	61.7%

Source: Farm Credit System Annual Information Statements

Other ratios. As discussed earlier, the banks adopted the Systemwide Credit Administration Review Program in 1987. This program uses a number of ratios to measure credit quality and sets Systemwide standards to serve as performance indicators. Although the condition of the System's portfolio has improved, Table 3 clearly shows that many of the banks continue to fail to meet the System's own standards.

FCA examinations. FCA rates the performance and current condition of the banks and associations with regard to capital adequacy, asset quality, management, earnings and liquidity. The asset quality rating, which considers credit administration, loan servicing, the adequacy of reserves, and trends in asset quality, is a measure of credit risk. The ratings are defined as follows:

1&2: Asset quality ratings of "1" and "2" represent situations involving a minimal level of concern. Both ratings represent sound portfolios, although the level and severity of adverse classifications in institutions with asset quality rated "2" general exceed those with asset quality rated "1."

3: An asset rating of "3" indicates a situation involving an appreciable degree of concern to the extent that current adverse trends suggest potential problems.

4&5: Ratings "4" and "5" represent increasingly more severe asset problems; rating "5" in particular represents an imminent threat to the institution's viability through the corrosive effect of asset quality problems.

As Table 4 shows, 40% of the banks and nearly 30% of the direct lender associations received asset quality ratings indicating severe asset problems. This certainly confirms the conclusion of the ratio analysis above: Although System institutions have made considerable improvements, many continue to exhibit significant credit problems, even after Federal assistance and a robust rebound in the agricultural sector.

Table 3

	System Standard	System Average	# FCBs Satisfactory	# FCBs Marginally Satisfactory	#FCBs not Satisfactory
Acceptable & OAEM Loans 12	S: 90% NS: <80%	79.8%	1	5	5
Nonaccrual Loans 13	S: <2% NS: 4%	6.4%	2	0	9
High Risk Loans 14	S: <4% NS: 8%	17.0%	2	0	9
Loans 30-Days Past Due 15	S: <2% NS: 5%	2.4%	7	3	1

Notes:

-- "S" = satisfactory; "NS" = not satisfactory.

-- Standards and averages are stated as percentages of gross loans.

-- The three BCs, not shown in this table, meet all of these standards.

-- Acceptable & OAEM Loans and Loans 30-Days or More Past Due as of June 30, 1989; Nonaccrual and High Risk Loans are as of September 30, 1989.

Sources:

Credit Monitoring Report of the Farm Credit System, June 30, 1989.

Federal Farm Credit Banks Funding Corporation: Analysis of September 30, 1989 Financial Results and Condition.

Table 4
Asset Quality Ratings
(as of 12/31/89)[23]

	1&2	3	4&5
# of Banks	5	4	6
# of Associations	48	35	28

Note: Totals include 15 banks, including 3 BCs and Jackson FICB, and 101 direct lender associations.

Source: Farm Credit Administration

Conclusions and Recommendations

Although System institutions have made significant progress in decreasing their credit risk, a significant amount remains. Implementation of improved credit operations and underwriting standards has been inconsistent. In addition, when FCBs transfer the real estate loan portfolio to direct lender associations, they are also transferring the credit risks. Many of these associations will likely require time to gain the experience needed to apply good underwriting criteria and otherwise manage the attendant risks of mortgage lending. In the interim, it is not clear that the FCBs have sufficient authority over these associations to mitigate this risk.

It is critical that all System institutions uniformly implement improvements in underwriting standards, differential loan pricing, and other credit operation improvements. For example, additional emphasis needs to be placed on cash flow analysis in addition to income statement analysis; annual collateral appraisals are needed on substandard loans; and the circumstances in which independent appraisals must be obtained need to be clarified. We therefore recommend that the System develop Systemwide standards that are binding at all levels. These standards should include procedures for FCBs to control the risks inherent in the associations' direct lending authority.

Finally, the current portfolios of many System institutions still have a large number of problem loans. Another serious downturn in the agricultural economy would undoubtedly lead once again to a serious deterioration in the portfolios of System institutions. While further improvements in credit administration and loan review would mitigate the impact of a downturn, it is not clear that such improvements would be sufficient to overcome the inherent risk from System institutions' current charter limitations. Given these concerns, we recommend that the System develop a stress test for simulating the effects of adverse economic conditions on System institutions' portfolios, profitability and capital positions.

Interest Rate Risk

Overview

FCBs are exposed to significant levels of interest rate risk.[24] Limited by charter to agricultural lending, nearly 75 percent of the FCBs' loan volume is in real estate debt predominantly composed of long-term farm mortgages. By their very nature, these loans have much more interest rate risk than short-term production loans. Moreover, there is generally very little good prepayment and default information for agricultural mortgages, unlike the residential mortgage market, which has benefited from numerous studies of that market's history.

As discussed earlier, the System's failure to manage interest rate risk in the volatile interest rate environment between 1980 and 1985 contributed to the crisis that resulted in Federal government assistance. The System priced its loan products at the average cost of funds, and funded these assets with long-term debt. The System was unprepared for a period of rising interest rates and increased defaults, followed by falling interest rates and significant prepayments.

Since 1987, the System has made substantial progress in recognizing interest rate risk and taking steps to manage and control it. However, there is one source of significant risk that is not generally being addressed: The interest rates on the System's variable rate loans are not indexed to market rates, but are instead administered by the management and boards of System banks. As a result, the repricing of these loans can be unpredictable -- particularly during periods of rising interest rates -- which makes it difficult for the System to properly manage interest rate risk.

System Assets and Liabilities

System loan products. The System's loan products generally fall into one of three categories: Variable rate loans; adjustable rate mortgages (ARMs); and fixed rate loans. Variable rate loans comprise over 65 percent of all loans made by the 11 FCBs, while ARMs and fixed rate loans comprise about 14 percent and 19 percent, respectively.

Variable rate loans have repricing characteristics ostensibly similar to ARMs. However, the rate does not necessarily change automatically based on changes in a specified index. Instead, rate changes for variable rate loans are administered by the System institution. The terms of a variable rate loan may contain a target index and, over a certain period of time, this loan may reprice exactly like an ARM. But the management and board of the System institution ultimately retain significant discretion in setting rate changes for a variable rate loan. Borrowers -- who also happen to be the owners -- can exert a great deal of pressure to keep their rates low.

Thus, during rising interest rate environments, the rates on variable rate loans traditionally did not keep pace with the banks' rising cost of funds. Although some banks have taken steps to address this problem, there is still a great deal of variation across different districts. Variable rate loans in several FCBs are formula-driven based upon a marginal cost of funds, much like ARMs; other FCBs, however, focus more on rates offered by competitors, reprice loans at irregular intervals at inconsistent spreads over indices, and give a great deal of loan pricing discretion to associations or individual credit officers.

System debt. System banks used long-term debt to establish a predictable cost of funds for their average cost pricing strategy in the early 1980s. As interest rates declined during the mid-1980s, many of the System's borrowers prepaid high-rate long-term loans, leaving most System institutions with lower rate loans funded with higher cost debt.

Since 1987, the System has reduced its long-term borrowing to more closely reflect the repricing characteristics of the System's loans, most of which are either variable or adjustable rate products. Although some specialized funding arrangements in 1989 involved medium term debt of one to ten years, the System's debt management continues to emphasize the short end of the market (discount notes, 3-month and 6-month bonds). Between 1987 and 1989, the percentage of the System's outstanding debt in short-term discount notes increased, and the average maturity of the System's total outstanding debt decreased from 1.6 years to about 1.1 years.

Asset/Liability Management

All System banks have Asset/Liability Management Committees (ALCOs) to help control their interest rate risk. Many of these committees have been established since 1987. The ALCOs, comprised of senior bank management, typically develop asset/liability management objectives and policies, and choose target accounts (e.g., net interest margin or market value of equity) to help implement and to monitor compliance with these policies. Most ALCOs report to their boards of directors on a monthly or quarterly basis.

Although there is some consistency across the System with regard to the basic structure of the ALCOs, there appears to be a great deal of variation with regard to the authority that they actually exercise. For instance, one ALCO has the authority to review and approve all loan products, set loan rates, and direct funding and investment strategies. Other ALCOs appear to have more tenuous positions, with authority dispersed among pricing committees, finance departments and the boards themselves.

There is also a great deal of variation with regard to the sophistication of the asset/liability management skills practiced by the different ALCOs. A number of FCBs use cumulative static GAP analysis, duration analysis, and comprehensive simulation modeling to anticipate and limit exposure to market rate changes. These banks may model the effect of proposed changes in loan prices, new loan products, or synthetic off balance sheet transactions. However, other banks have only recently begun to use duration analysis or to simulate interest rate shocks.

Market Access and Risk Alert Program. The 1987 Act enhanced the Funding Corporation's powers by giving it the authority to determine the "conditions of participation by the several banks in each issue of joint, consolidated, or System-wide obligations."[25] The Funding Corporation has responded by initiating the Market Access and Risk Alert Program (MARAP), a risk rating system that monitors key performance ratios for each System bank, and encourages the development of more sophisticated asset/liability management skills System-wide.

MARAP reports are submitted by the banks on a quarterly basis. These reports help the Funding Corporaton monitor and evaluate, on both a historical and prospective basis, the financial and credit condition of the banks by reviewing the following five areas: Profitability ratios; capital ratios; portfolio and asset quality ratios; collateral; and asset/liability management.

The Funding Corporation has set guidelines or targets for each of these areas. The extent to which it meets these guidelines determines whether a bank is put at one of the following four alert points:

- First alert point - most of the criteria are met now and are projected to be substantially met or exceeded, however, a potential weakness in one category and/or condition that could have a significant economic impact has been identified.
- Second alert point - most of the criteria are met now, however, there are weaknesses in either the historical or prospective indicators.
- Third alert point - serious weaknesses noted in historical trends, however, the Funding Corporation agrees that possibly improving trends can be expected in the future.

- Fourth alert point - serious weaknesses in historical trends, with no improvement predicted in the prospective information.

Actions taken depend upon the alert point, but, with its authority to establish the conditions of participation in debt issuance, the Funding Corporation's ultimate enforcement tool is the complete denial of access to the financial markets.

The asset/liability management section of MARAP requires each bank to provide a static gap report identifying the difference between the dollar amounts of assets and liabilities maturing during the next 3, 6, 12, 24 and 36 months. The Funding Corporation's standard recommends that the cumulative static gap for each of these periods should not exceed 25% of total assets. MARAP also requires each bank to provide an estimate of its duration of equity. The Funding Corporation's standard recommends that a 100 basis point move in interest rates, up or down, should not cause the market value of a bank's equity to change by more than 30%. Both the static gap and duration standards are rather lenient.

Hedging, swaps and other asset/liability management tools. In 1987, the Funding Corporation set up a hedging program to lock in funding costs on term funds (with maturities of one year or longer) to enable banks to make future rate commitments to borrowers. In order to assist System banks match their portfolios, the Funding Corporation has also entered the market with new bond issues for pairing with interest rate swaps to create indexed floating-rate funds, and expedited the transfer of debt between System institutions.

Loan pricing. Because of the System's average cost pricing history, the Farm Credit Act Amendments of 1986 required the System to take "into consideration ... the cost of funds" when setting interest rates, and required that "in no case is any borrower to be charged a rate of interest that is below competitive market rates...."[26] The 1987 Act required System institutions to take "into consideration the cost of money to the bank, necessary reserve and expenses of the bank and associations, and providing services to members"[27] in setting interest rates. In other words, the System has been instructed to price at marginal cost.

In 1987, the System established a model pricing program to establish pricing standards consistent with the 1986 amendments. Among other things, this program recommended the use of marginal cost pricing and prepayment penalties. As discussed in the credit section, the model pricing program contains recommended standards; adoption of these standards by System institutions is voluntary. As a result, there is still a great deal of inconsistency across the System.

As the model pricing program suggests, System institutions clearly need to price the risk of prepayment, particularly on their fixed rate products. Several FCBs devote significant resources to modeling and quantifying this risk, and have explicit provisions for it in their rate structures. Other banks, however, do not appear to quantify prepayment risk, nor do they explicitly include it as a component of their rate structures. A number of banks even assumed no prepayments on significant portions of their loan portfolios in calculating their duration of equity for the quarterly MARAP report. Recognizing this problem, the Funding Corporation has begun a program to collect prepayment histories in an attempt to create a centralized prepayment database. However, because System institutions have only been offering fixed rate loans for about two years, this database will be somewhat limited in the near term.

Interest Rate Sensitivity

Because the System has not yet worked its way completely out of the problems resulting from the 1980s experience, it is difficult to render a definitive judgement upon its management of interest rate risk at this time. Clearly, the System is attempting to put itself into a position in which another period of sustained volatility in interest rates does not significantly threaten its profitability. As discussed earlier, the System has moved rather aggressively to reduce the duration of its liabilities.

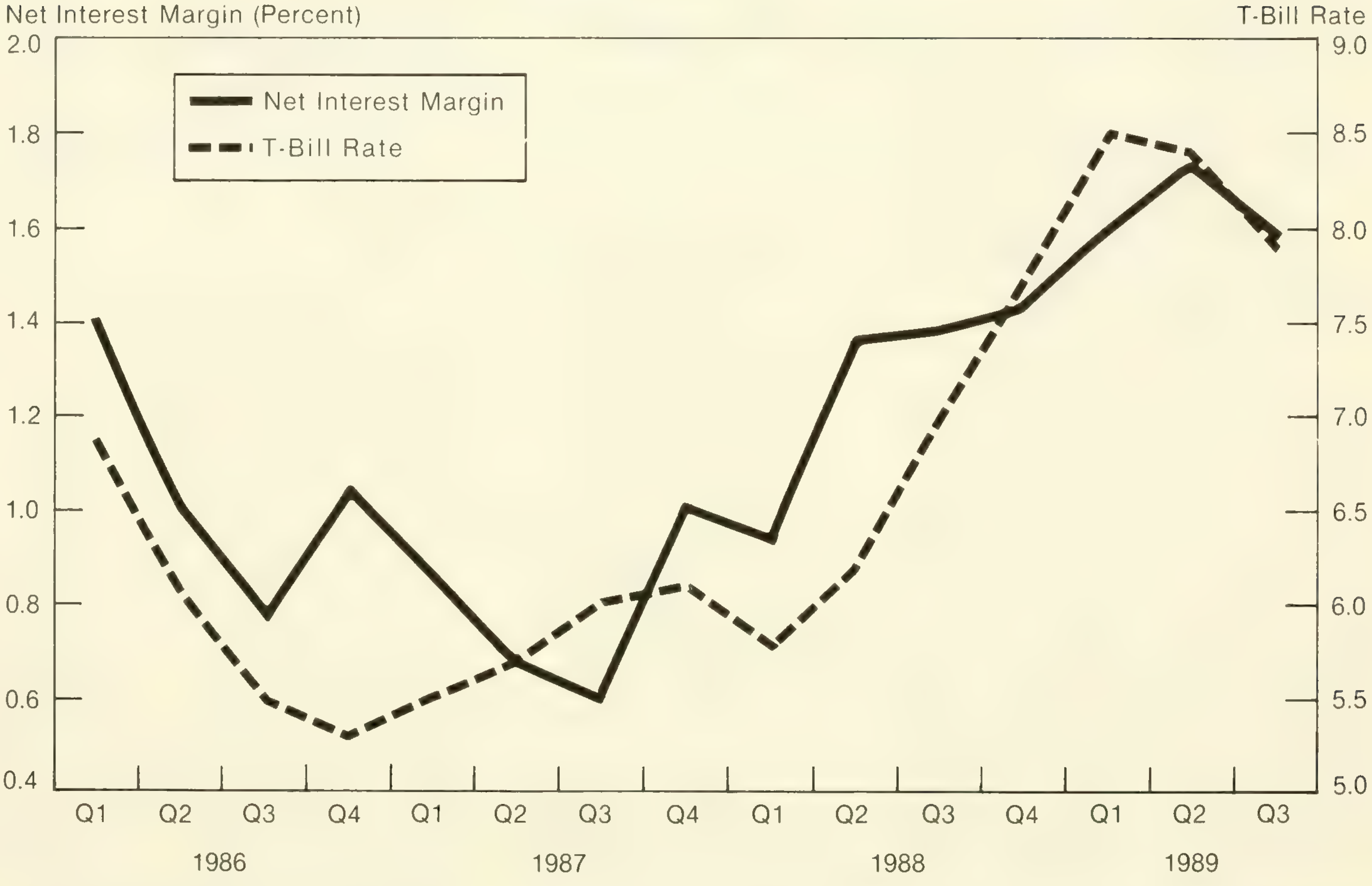
One way to measure its success is to track the sensitivity of the System's net interest margin to interest rate movements. Net interest margin should show less variation as asset/liability management improves. Chart 9 plots the System's net interest margin (as a percentage of average earning assets) and the 3-month Treasury rate, by quarter, for the last four years. This chart, which generally shows net interest margin moving extremely closely with interest rates, would suggest that the System's balance sheet is very asset sensitive. However, during 1987 and 1988, the Assistance Board's actions reduced the amount of high cost debt at three banks by over $2 billion. This resulted in significantly reduced interest expense for these troubled banks, and would help explain the rapid increase in net interest margin during that period.

According to the third quarter, 1989 MARAP report, the System collectively is in a slight asset-sensitive position. That is, given a change in interest rates, the System would expect a slight correlative change in net interest income (i.e., an increase if rates go up, and a decrease if rates go down). As Chart 10 shows, the reported duration of equity for the FCBs

Chart 9

Farm Credit System Net Interest Margin vs. T-Bill Rate

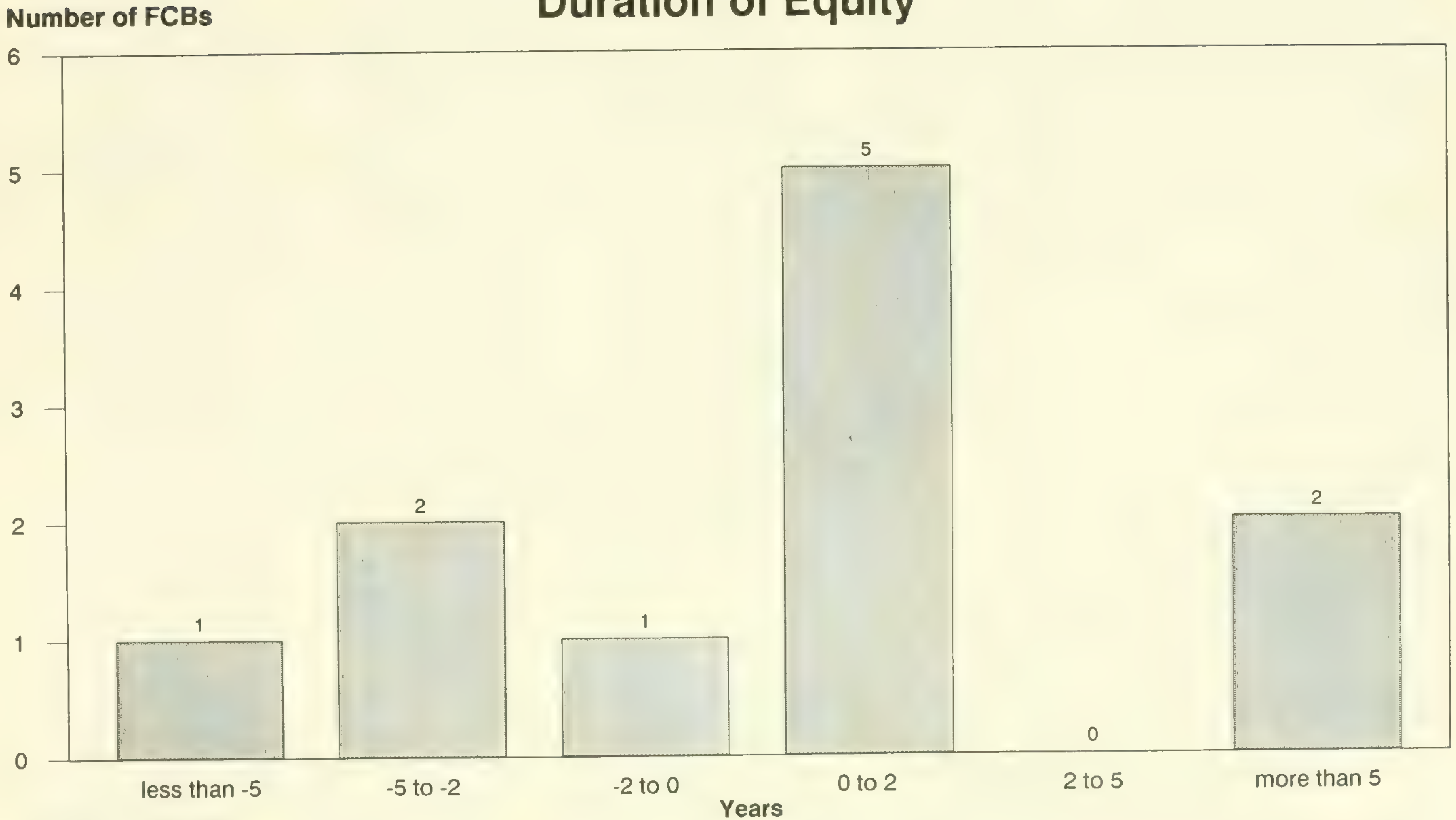
Quarterly Data



Source: Council of Economic Advisors.
Federal Farm Credit Banks Funding Corporation: Quarterly analysis of Farm Credit System financial results and condition.

Chart 10

Farm Credit Banks
Duration of Equity



Total = - 0.29 years.

Source: Federal Farm Credit Banks Funding Corporation, Market Access and Risk Alert Program, September 30, 1989.

indicates that they are not particularly sensitive to changes in interest rates. As discussed earlier, these numbers may be somewhat misleading if prepayment assumptions are inaccurate.

There is, however, another source of potential interest rate risk exposure that may not be eliminated by the System's continuing improvements in asset/liability management. In evaluating their exposure, System banks generally assume that their variable rate loans will remain fully sensitive to interest rates, even in a sharply rising rate environment. Yet the traditional response of the banks in such an environment has been to administratively constrain the extent to which these assets reprice upwardly.

For example, one FCB's strategic and business plan contains the following analysis of its variable rate loans: "In practice the 1 to 1 relationship to movements in Prime do not occur. Timing of the change in Prime, the need of borrower disclosure, and management's control over the rates as a means to achieve its goals temper this relationship. In fact the movement of user rates generally lag by at least a month and do not change on a 1 to 1 basis always." Yet this bank's analysis of its interest rate risk exposure assumes a 1 to 1 relationship.

If the banks were to continue this practice in a future rising rate environment, the basis for their asset/liability management decisions would be flawed. The assumption that their assets would reprice quickly would demand liabilities of shorter duration than those appropriate for an environment of administratively constrained repricing. Depending upon the magnitude of this difference, the effect of interest rate movements on a bank's income could be the exact opposite of what is expected by bank management.

This problem is particularly insidious because even if a bank conscientiously manages its perceived risks, its flawed assumptions can cause bad decisions. The System has made a concerted effort to match the durations of its assets and liabilities, particularly through the shortening of System-wide obligations. But if their pricing assumptions are fundamentally wrong (at least in a rising interest rate environment), the System may actually be increasing its exposure by shortening its liabilities.

Overly optimistic repricing assumptions are symptomatic of a much more fundamental problem with the System's variable rate loan product. As long as interest rates on these loans are administered rates, this risk will exist. It is difficult to quantify -- with any degree of confidence -- the risk of a product when the decisions involved in administering rates are unpredictable; and unquantified risks are difficult to manage.

Conclusions and Recommendations

A major part of the System's difficulties in the 1980s resulted from severe interest rate risk exposure. System institutions have made significant improvements in their management of this risk, but still have considerable room for improvement.

It is critical that all System banks come up to the level of sophistication in managing interest rate risk currently enjoyed by only a few banks. We recommend that the Funding Corporation continue to develop the MARAP program, and use the tools at its disposal to encourage more consistent practices across the System. For example, as the System develops better asset/liability management skills, the Funding Corporation should set more rigorous targets (e.g., static gaps and duration of equity) in the MARAP program. In addition, the Funding Corporation should continue its efforts to create a prepayment data base so that System institutions can use this information to make better pricing decisions on loan products. System institutions should also be closely monitored to ensure that they are truly practicing marginal cost pricing.

Finally, we recommend that all System institutions tie the repricing of their variable rate loan products to indices. As long as these loans have rates that are administered by the management and boards of System banks, they will continue to be a potential source of interest rate risk exposure.

Management and Operations Risk

Overview

The Farm Credit System consists of nearly 300 separate institutions, each with a distinct set of procedures, structures, and management personnel. As a result, no generalization is likely to apply to all System institutions. However, the following problems in the area of management and operations appear to occur with enough frequency to merit special consideration:

(1) The boards of directors (boards) at some banks and associations do not exercise an adequate level of oversight. For instance, some boards do not rigorously evaluate their senior management against performance objectives.

(2) Some FCBs have ineffective internal audit functions.

(3) FCBs have difficulty maintaining qualified EDP auditing staff.

(4) Some ACAs, which were allowed to be formed by the 1987 Act, have yet to fully develop the control mechanisms and skills necessary to manage their new responsibilities.

(5) Some System institutions continue to have inadequate reporting systems for problem loans.

Sources of Risk

Management processes are needed to monitor operations, to identify potential risks in operations, and to suggest and implement corrective measures. In this section we attempt to identify the controls and systems that System institutions have in place to monitor management and operations risks. These risk controls are divided into the following five areas: Planning, Policy Making, Control Systems, Management Information Systems (MIS) and Personnel Administration. The analysis in this section is based on interviews with the System's regulator, FCA, as well as discussions with management of one of the System's FCBs.[28] For this first study, we did not test for compliance with policies, procedures and established controls, or perform risk assessments at each of the System banks.

FCA Concerns

Planning. FCA regulations require the board of each System institution annually to adopt a three-year operating plan and budget.[29] The plan must consider the institution's strategic goals and capital adequacy. Because the regulatory planning requirement is general, System institutions generally meet the minimum requirements. However, because some boards do not use the process to set action plans and performance standards for evaluating senior management (as intended), the planning process is not necessarily an effective control mechanism to measure management performance.

A significant number of the System's boards do an inadequate job of holding senior management to standards of accountability.[30] The small size of most boards (five members), the frequency with which board members are also System borrowers (and thereby face a potential conflict of interest), the absence of profit incentives or a culture of profit within the cooperative-oriented System, and the apparent reluctance of board members to criticize senior officers for failing to meet plan objectives, are factors that contribute to the inadequate use of performance management standards by some boards.

Some FCBs do not integrate an analysis of competitive factors into their strategic and operating plans. Competition from commercial banks and other agricultural lenders varies by region of the country, but competitive factors were least addressed in the plans of FCBs that most needed to understand their competition.

Policy making. FCA regulations require each FCB to have policies in place governing specific, important functions such as lending, funding, capital adequacy, internal controls, and personnel.[31] FCA examiners routinely assess the FCBs for existence of such policies and for management compliance with them. While the policy-making process varies among the FCBs, the typical pattern is that policy initiatives come from management, and are recommended to the board by an executive committee composed of division heads (senior officers).

FCB boards are not generally very active at probing management regarding the need for policy changes or new initiatives. However, while the policy-making process varies among the FCBs, overall they have good procedures in place and policy changes are well communicated throughout the organization.

Control systems. Although the design and integrity of control systems for reviewing and classifying the credit quality of assets are generally adequate, the following three control problems are of particular concern:

(1) The internal audit function at some FCBs has insufficient independence: FCB board members are usually farm professionals, not organization executives; these boards are not always aware of the need for internal control systems in large organizations, particularly in credit granting

institutions like the FCBs. Consequently, individuals responsible for the internal audit function at the FCBs often report to senior management rather than to the board.[32] The situation is made worse when the internal audit function reports to a mid-level officer.

(2) Some ACAs have yet to develop fully the control mechanisms and skills necessary to manage their new responsibilities. For example, the loan administration staff at some ACAs do not have adequate accounting skills.

(3) Some FCBs continue to have inadequate reporting systems for problem loans. This, combined with inadequate accounting skills, can cause errors in accounting for past due and nonaccrual loans.

Management information systems (MIS). The FCA requires all FCBs regularly to submit standardized financial statements describing their profit performance and balance sheet condition. In addition, FCA receives computer files on loan information which can be used to monitor the distribution of credit throughout the System. Efforts are currently underway to develop this capability.

The absence of computerized systems for tracking and reporting nonaccrual loans, particularly in the Federal Land Banks, was the most serious MIS problem during the mid-1980s. Several FCBs still keep problem loans and foreclosed real estate assets on a manual accounting system, although they are shifting to automated systems. Computerized MIS is still not fully standardized among the FCBs, though FCBs are replacing out-of-date systems where possible and are moving towards standardized computer software.

Other MIS problems within the System include the difficulty of hiring and retaining qualified EDP auditing staff, and the lack of computer security systems to protect access and data integrity.

Personnel administration. FCA is required to approve the compensation of all bank chief executive officers; on several occasions FCA has used this power to veto proposed increases where they seemed unwarranted for a bank under financial stress (or in other circumstances when the FCA deemed an increase inappropriate). FCA officials believe that the caliber of FCB chief executives is stronger now than five years ago.

Review of FCB

The FCB reviewed by Treasury generally has the necessary controls, monitoring and information systems in the five areas of risk control. However, this review also indicates that the FCB has at least two of the problems about which the FCA, on a Systemwide basis, has expressed concern:

(1) Senior management of the FCB indicated concern about the level of accounting and computer skills among loan servicing staff in the ACAs;

(2) Like many other System banks, this FCB has experienced difficulty in retaining its EDP auditor.

Conclusions and Recommendations

Some System institutions are exposed to risks associated with a lack of Board oversight, ineffective internal audit functions, the lack of control skills at some newly established ACAs, and inadequate MIS. We recommend that the System take steps to address these problems.

Capital Analysis

Overview

The FCA has promulgated risk-based capital standards requiring System institutions to hold permanent capital of at least 7% of risk-based assets. However, this level of capital would likely have been insufficient to protect several institutions during the height of the System's troubles in the 1980s. More importantly, although borrower stock and retained earnings qualify as permanent capital, there is considerable doubt regarding the true "at-risk" nature of the System's borrower stock.

The System also has two mechanisms, the Insurance Corporation and joint and several liability, essentially designed to pool the System's capital in the event of a default by a bank on its share of a Systemwide obligation. The Insurance Corporation also inherits the role of the Assistance Board in 1993 when the Assistance Board ceases operations. The Insurance Fund thus provides a Systemwide mechanism for pooling capital to provide assistance to individual institutions.

The joint and several liability mechanism is to protect investors holding Systemwide debt, but, unlike the Insurance Corporation, it does not protect taxpayers from exposure to System losses. Thus, before the Insurance Fund can be accessed in 1993, retained earnings are the taxpayer's only protection from such losses.

Components of Capital

Farm Credit System capital consists almost entirely of voting common stock owned by borrowers and surplus (retained earnings). System institutions also have preferred stock held by FAC and small amounts of nonvoting common stock and participation certificates.

Voting common stock is held by System borrowers as a condition of taking out their loans. Because the stock ownership requirement has traditionally been set at a percentage of the loan, capital stock levels have normally changed with loan levels. The 1987 Act decreased the minimum stock requirements from 5% of each borrower's outstanding loans to the lesser of 2% or $1,000; however, System institutions may require more.

A fraction of retained earnings, referred to as allocated surplus, is set aside by some of the institutions (primarily BCs) for payment of stock dividends to the borrower/stockholders. The remaining retained earnings is referred to as unallocated surplus.

System institutions that have been assisted by the Assistance Board have issued nonvoting preferred stock to FAC in the amount of the assistance. The institutions are to repay this assistance by redeeming the stock.

Protected vs. at-risk capital. The 1987 Act guaranteed that all common stock and allocated surplus reported as of October 6, 1988 would be redeemable at par value by borrower/stockholders. Because this "protected" stock really represents a liability of System institutions, and does not provide protection against losses, FCA does not recognize it as permanent capital. Accordingly, for the purposes of this study, protected borrower stock will not be included as a component of System capital.

By statute, unprotected or "at-risk" stock must not have a stated retirement date (i.e., when the loan is repaid), and may be redeemed only at the direction of the board of the institution. In addition, the FCA prohibits a System institution from redeeming its capital stock if that institution does not meet the FCA's capital standards. Total at-risk capital is thus composed of this at-risk stock as well as retained earnings. Table 5 presents the capital accounts of System institutions on a combined basis as of December 31, 1989.

Table 5
Total At-Risk System Capital as of December 31, 1989

($ millions)

	Combined Banks	Combined Associations	Combined System[33]
Borrower Stock	$3,552	$999	$1,117
Retained Earnings	418	2,204	2,291
Total At-risk Capital	$3,970	$3,203	$3,408

Note: The combined System column does not equal the sum of the combined banks and associations accounts because it corrects for investments by associations in banks that are counted as capital by both the association and the bank.[34]

Source: Farm Credit System Annual Information Statement, 1989

Trends in Capital Accounts

As discussed earlier, the downturn in agriculture during the early 1980s caused many System borrowers to experience unprecedented financial stress. As a result, the System's proportion of delinquencies to gross loans reached historical peaks, causing the System to report a loss of $2.7 billion in 1985. Retained earnings sank to $3.4 billion (4.3% of assets) from $6.2 billion (6.2% of assets) in 1984. Capital stock as a percent of assets also declined slightly as borrowers began to redeem stock held in excess of loan requirements. Further declines in borrower performance and the System's recognition of losses brought about another huge loss of $1.9 billion in 1986, reducing retained earnings to $1.5 billion (2.1% of assets).

Conditions in the farm sector stabilized and then began to improve from 1987 through 1989. The 1987 Act (enacted in early 1988), as well as improved agricultural prospects, helped restore some confidence in System institutions. The System's loan volume began to stabilize and its earnings position gradually improved. As of December 1989, retained earnings were $2.3 billion (3.5% of assets).

Table 6 shows trends in capital on a Systemwide basis. Because the 1987 Act eliminated all existing borrower stock as a source of protection against losses, the System's at-risk capital decreased significantly in 1988. Between 1988 and 1989, total at-risk capital increased by 70 percent primarily because a significant amount of protected borrower stock was converted into at-risk stock. (The new capitalization plans of System institutions often provide inducements such as lower stock purchase requirements for owners of protected stock to convert to at-risk stock.) Even when all protected borrower stock has been converted, however, it is likely that the System will rely, even more than it has in the past, upon retained earnings as a major source of capital. This is because many System institutions have incorporated the 1987 Act's provisions for lower borrower stock requirements (the lesser of $1,000 or 2 percent of outstanding loans) into their capitalization plans.

Table 6
System Trends

	1985	1986	1987	1988	1989
	($ billions)				
Net Loans	66.6	54.6	49.6	49.6	49.1
Total Assets	79.8	70.1	62.2	61.6	64.0
Systemwide Debt	69.2	62.6	55.5	54.7	55.9
Protected Stock	0.0	0.0	0.0	3.3	1.7
At-Risk Capital	8.4	5.6	5.0	2.0	3.4
	(key ratios)				
At-Risk Stock/ Assets	6.2%	5.9%	6.0%	0.4%	2.7%
Retained Earnings/ Assets	4.3	2.2	2.1	2.9	3.5
Total At-Risk Capital/Assets	10.5	8.1	8.1	3.3	5.2
Retained Earnings/ At-Risk Capital	40.5	26.8	26.0	88.5	67.7

Source: Farm Credit System Annual Information Statements

Regulatory capital standards. In 1989, the FCA implemented risk-based capital standards similar to those of other Federal regulators. The standards provide for risk weights ranging from 0 to 100 percent to be applied to loans and other assets of Farm Credit institutions. Multiplication of the weights by the dollar amounts of outstanding on- and off-balance sheet assets results in a risk-adjusted asset base. Each institution is required to hold "permanent capital" equal to at least 7 percent of this risk-adjusted asset base by the end of 1992. An institution's permanent capital is defined as its at-risk voting and nonvoting common stock, retained earnings, any nonvoting preferred stock held by FAC in excess of the amount needed to cover any impairment of the institution's protected stock, and any other preferred stock outstanding.

Each institution's permanent capital ratio is required to progress by specified interim amounts from its actual ratio in June 1988 to the 7 percent requirement at the end of 1992. System institutions are prohibited from reducing permanent capital unless they meet their required standards. As of December 31, 1989, the Spokane FCB was the only System bank not in compliance with its interim capital adequacy standard.[35] As Table 7 shows, the permanent capital ratios of most of the banks have increased since 1988; several show dramatic increases due to conversions of protected borrower stock to at-risk stock and, in the cases of the assisted banks of Louisville, St. Paul and Omaha, the addition of preferred stock purchased by FAC. Still, the permanent capital ratios of several institutions are well below 7%. Even assuming returns on assets of about 1%, these institutions may have problems meeting the 7% standard by year-end 1992. If an institution does not meet either an interim or the final capital standard, but has made progress towards meeting the standard, it may be eligible for capital forbearance.[36] Otherwise, the FCA can take enforcement actions against the institution.

Table 7

Permanent Capital Ratios of Farm Credit System Banks
(as % of Risk-adjusted Assets)

	1988	1989	Year-end 1989 Interim Standard[37]
Springfield FCB	4.1%	6.5%	4.8%
Baltimore FCB	12.7	12.1	7.0
Columbia FCB	8.2	9.2	7.0
Louisville FCB	-0.1	9.9	1.7
St. Louis FCB	0.4	5.8	3.1
St. Paul FCB	-2.8	1.3	-0.4
Omaha FCB	-2.6	5.6	1.0
Wichita FCB	2.3	7.4	2.3
Texas FCB	9.0	10.0	7.0
Western FCB	0.6	2.9	2.2
Spokane FCB	0.8	-0.1	4.2
FICB of Jackson	15.5	16.0	7.0
CoBank	3.0	5.4	4.0
Springfield BC	4.2	9.7	5.3
St. Paul BC	2.4	9.3	3.3

Source: Farm Credit Administration

Assessment of Capital Adequacy

The preceding risk sections have shown that System banks are exposed to a substantial amount of risk. However, before discussing the adequacy of the System's capital for providing protection against these risks, the quality of the capital itself must be discussed.

First, there is a legitimate question as to whether the System's at-risk stock is truly at risk. The stockholders of System institutions are also borrowers and may act to put their borrower interests above the institution itself. For example, the System practiced average cost pricing primarily to keep borrowers' interest rates low and constant, even though it ultimately hurt the profitability (and viability) of System institutions. Throughout the volatile 1980s, no borrower/stockholder lost a dollar of capital investment. As a result, no precedent has ever been established that suggests that their actions as borrowers will ever have a negative impact upon their interests as stockholders. Rather than allow System capital to absorb System losses, the 1987 Act protected the value of all borrower stock. Going forward, it is not clear that today's "at-risk" stock will not become tomorrow's "protected" stock.

A related problem is the System's traditional practice of retiring a borrower's stock purchase upon repayment of a loan. In addition, System institutions lend their borrowers the funds with which they make their required stock purchases. Both of these practices only serve to emphasize the fact that the borrower/stockholder's primary interest is as a borrower, not as an owner. Although the 1987 Act prohibits at-risk stock from having explicit retirement dates, actual practice has not significantly changed. Most System institutions apparently continue to retire borrower stock upon repayment of loans; it is not clear that they have much of a choice, given that many borrowers might refuse to borrow from them if their stock were not retired. Moreover, a borrower can conceivably walk away from a loan when the outstanding amount of the loan equals the stock purchase, leaving the institution with stock as "collateral." The ultimate effect is that the stock is still self-liquidating, just as if the institutions continued to have explicit retirement dates for borrower stock.

Pooling of System capital. If a bank were to suffer losses sufficient to cause it to default on its share of Systemwide obligations, "joint and several" liability would be triggered. Under this mechanism, the default is shared among the remaining System banks; in effect, the capital of the System is "pooled." However, joint and several liability serves to protect investors holding Systemwide obligations; it is not a mechanism for assisting troubled System banks. In fact, the **FCA** is required to appoint a receiver to liquidate, or otherwise wind up the affairs of, any bank that defaults on its portion of a Systemwide obligation.

Recent history would suggest that the joint and several liability mechanism does not eliminate taxpayer exposure to System losses, even if funds exist in the System. For example, although the System experienced substantial losses in the prior three years, it still had $1.5 billion of retained earnings and $5 billion of total capital at year-end 1987. Joint and several liability was never triggered, and yet the System received assistance from the Federal Government.

The 1987 Act created the Insurance Corporation, which will become active in 1993, to ensure:

(1) timely payment of interest and principal on Systemwide debt obligations prior to joint and several liability;

(2) retirement of protected borrower stock at par value; and,

(3) repayment of assistance for any assisted institution defaulting on its obligation.

The Insurance Corporation assesses an annual premium on all System banks, which may in turn assess each direct lender association for its share of the premium. The Insurance Fund has a target amount, set by statute, of two percent of aggregate insured obligations. Like joint and several liability, the Insurance Fund essentially acts as a pooler of System capital (through the assessment); if it proves insufficient to satisfy defaults on the Systemwide debt, each non-defaulting bank is assessed a share of the remaining default under joint and several liability.

In 1993, the Insurance Corporation will also replace the Assistance Board as a potential source of assistance for troubled institutions, and will have the power to faciliate mergers or consolidation of System banks.

Conclusions and Recommendations

Most System institutions have improved their capital positions since the mid-1980s. Serious questions remain, however, as to whether the System's borrower stock is truly at-risk capital. Although the FCA's risk-based standards treat borrower stock and retained earnings as qualitatively equal components of primary capital, the doubtful nature of the borrower stock leaves retained earnings as the System's only incontrovertible source of loss protection.

It is also not clear that the 7% risk-based standard constitutes an adequate level of capital. Although the System has generally improved its risk management, it is important to note that the actual losses experienced by a number of System institutions during the mid-1980s exceeded 7 percent of assets.[38] (FCA emphasizes that 7% capital is a minimum, and that it will require riskier institutions to hold more.)

As described above, the Insurance Fund provides a Systemwide mechanism by which System capital can be pooled to provide assistance to individual System banks. When the Insurance Fund can be accessed in 1993, it is expected to have assets of over $600 million, which could be used as a source of capital infusion for insolvent System banks.

However, if unforeseen circumstances were to cause the condition of the System to deteriorate rapidly before 1993, and if the $4 billion provided by the 1987 Act were exhausted, the only dependable source of protection for the taxpayer would be the System's own retained earnings. We therefore recommend that the System continue to build up retained earnings to provide more protection against System losses.

Quality and Timeliness of Information

Overview. System institutions provide reports and information to the FCA, the Congress, the Treasury Department, the IRS, and to their shareholders and other interested members of the public. These sources of information generally form a credible basis for analysis by each entity.

Analysis. System institutions are required to provide an extensive amount of information to their regulator, the FCA. The information includes the quarterly call reports, a quarterly report on any lending with potential conflicts of interest, quarterly reports on loans to direct lender associations in excess of lending limits, monthly district board minutes, and a monthly summary of adversely classified loans. System institutions report annually on personnel policies, the compensation of chief executive officers, audit reports, credit quality reports on lending by associations, and board member loan actions. Data on young, beginning, and small farmers are also reported annually. Criminal actions are reported as needed.

The call reports provide detail on all asset, liability, and equity data, including interest rate information. These reports, together with the periodic examinations made by FCA, form a credible basis for comparative analysis of information by the regulator. Both the FCA and the System itself are required to report to Congress on the System's activities, trends, and its financial condition. These reports appear to furnish timely and complete information.

The level of detail in the audited financial reports compares favorably with that available from commercial banking institutions. The financial information is prepared in accordance with GAAP. This is a departure from practices prior to the 1987 Act; it provides a more complete picture of the financial condition of System institutions, particularly with regard to loan classifications and accruals. Audited financial statements, both by individual institution and on a consolidated basis, are made available to shareholders and the public on an annual basis. Unaudited statements are made available on a quarterly basis. Shareholders also receive adequate financial information on the activities of their institutions.

Finally, System institutions also consult with the appropriate Treasury debt officials on the issuance of debt securities. The IRS receives withholding tax information as required and business income tax as required.

Conclusions and Recommendations

Accurate and timely reports are furnished as required.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

The government bailout of the Farm Credit System illustrates very clearly the real risks and real costs associated with GSEs. Although the System has taken steps to improve its risk management, significant risks remain.

Business Risk

The System is no different from other GSEs in that it is limited to investing in a single business sector. The risks associated with this limitation are probably greater for the System due to the volatility of the agricultural sector. The System's more diversified competitors, primarily commercial banks, have been gaining market share at the System's expense; there is no reason to believe that this trend will not continue.

We therefore recommend that the System develop an overall plan for remaining competitive in the future. Any plan should include the continued consolidation of System institutions, as well as other steps for reducing expenses.

Credit Risk

Because of its single sector restriction, the System has some inherent credit risk. In addition, the System is continuing to work its way out of the credit problems it experienced in the 1980s. While System institutions have made great strides in implementing strict underwriting standards, differential loan pricing, and other credit operation improvements, such implementation has been inconsistent.

We recommend that the System develop Systemwide standards that are binding at all levels. These standards should include procedures for the district FCBs to control the risks inherent in the associations' direct lending authority.

Interest Rate Risk

A major part of the System's difficulties in the 1980s resulted from severe interest rate risk exposure. System institutions have made significant improvements in their management of this risk, but still have considerable room for improvement.

It is critical that all System banks come up to the level of sophistication in managing interest rate risk currently enjoyed by only a few banks. We recommend that the Funding Corporation continue to develop its Market Access Risk Alert Program (MARAP), and use the tools at its disposal to encourage more consistent practices across the System. Such practices should include strict adherence to marginal cost pricing at all System institutions.

Finally, the System's variable rate loan product has rates that are administered by the management and boards of System banks. We recommend that the repricing of these loans be tied firmly to indices; until this is done, these loans will continue to be a potential source of interest rate risk exposure.

Management and Operations Risk

Some System institutions are exposed to risks associated with a lack of Board oversight, ineffective internal audit functions, the lack of control skills at some newly established ACAs, and inadequate MIS. We recommend that the System take steps to address these problems.

Capital Adequacy

The extent to which System institutions take steps to improve their management of the risks associated with their doing business will clearly have an impact on the adequacy of their capital. The FCA has taken an important step by implementing risk-based capital standards. However, it is not clear that the 7% standard constitutes an adequate level of capital.

In addition, we have serious doubts that the System's "at-risk" capital stock, which is a major component of the System's permanent capital, is truly at risk. Until the Insurance Fund can be accessed in 1993, the System's retained earnings are the only dependable source of protection for the taxpayer from additional System losses. We therefore recommend that the System build up retained earnings as protection against such losses.

Quality and Timeliness of Information

System institutions provide reports and information as required in a timely fashion. This information generally forms a credible basis for analysis.

ENDNOTES

1. Pub. L. No. 92-181

2. Farm Credit Act, Sec. 1.1, 12 U.S.C. 2001.

3. This debt number includes $843 million of FAC debt.

4. Report to Investors of the Farm Credit System, 1989.

5. FCBs are authorized to accept deposits from their associations (12 U.S.C. 2013).

6. 31 U.S.C. 9108(d).

7. The Jackson FLB was the first System institution to request assistance from the Assistance Board. Assistance was denied, and the bank was put into receivership by the FCA. The Jackson FICB is expected to be incorporated into the Texas FCB.

8. See chapter 5 of the 1987 Economic Report of the President and the July 1987 Federal Reserve Bulletin, "Turning the Corner on Troubled Farm Debt," for more in-depth discussions of these events.

9. Pub. L. No. 100-233.

10. In addition to providing financial assistance, the 1987 Act included provisions which protected certain borrower stock and allocated equities; required the FLB and FICB in each district to merge as an FCB; expanded System institutions' authorities for voluntary mergers and reorganization; established the Farm Credit System Insurance Corporation primarily to provide protection to holders of Systemwide obligations and certain other debt obligations of the banks; and established the Federal Agricultural Mortgage Corporation (Farmer Mac) to attract new capital for the financing of agricultural real estate and to provide liquidity to agricultural lenders.

11. The three Banks for Cooperatives have national charters.

12. USDA Agricultural Income and Finance Situation and Outlook Report, February 1990. The total farm debt number does not include households, and the System number does not include the BCs.

13. The Insurance Corporation's premium, set by statute, is 15 basis points multiplied by each bank's accruing loans, plus 25 basis points multiplied by each bank's nonaccruing loans.

14. Commercial banks must pay 12 basis points towards the Bank Insurance Fund in 1990, and 15 basis points in 1991.

15. The analysis in this section is based upon interviews with the FCA, one FCB, and policies and other documentation supplied by the FCBs and other System organizations. The information supplied by FCA was drawn from examinations conducted in the second half of 1989.

16. This section is based upon a review of one FCB's procedures, the FCA's review of the banks which have received Federal assistance, and the most current results of the System's own credit monitoring reports.

17. 12 U.S.C. 2001(c).

18. A number of the System's weaker banks have been found -- either by the FCA or the Funding Corporation -- to have this problem.

19. Loans that are not classified in these two categories are considered to be at risk of not making payments on, or otherwise not satisfying the terms of, the loan.

20. Nonaccrual loans are currently not fulfilling their obligation and interest is not being accrued for them. Since these loans do not generate interest income, but must be funded (at some interest rate), the cost to carry these assets imposes a significant expense burden on the lending institution. The assets also may result in future loan losses.

21. High Risk loans include nonaccruals, formally restructured loans and other high risk loans. High risk loans are those assets which are most vulnerable to future loan losses and on which income will not be earned or is suspect.

22. The category, Loans 30 days or more past due, is an indicator of potential trouble in loans on which interest is currently being accrued.

23. Although FCA conducts annual examinations of these institutions, they do not necessarily occur at the same time. Thus, some of these ratings may not be good indicators of current conditions because they may be as much as one year old.

24. The analysis in this section focuses on the FCBs, and not on the BCs, because the primary source of interest rate risk in the System, long term real estate loans, are made by the FCBs (or their associations).

25. 12 U.S.C. 2160(b)(2).

26. 12 U.S.C. 2001(c).

27. 12 U.S.C. 2016(b).

28. Interviews with officials of one FCB were used to determine how one of the System banks controls management and operations risk, and to obtain its perspective on similar control systems in place at other System institutions.

29. See 12 C.F.R. 618.8440 and 615.5210.

30. In a meeting on 2/24/90, one FCA official suggested that the proportion was about 50 percent.

31. For example, the FCA has issued proposed regulations which describe how district banks shall grant loans to ACAs; a written financing agreement executed by both parties must exist. 53 Fed. Reg. 44438 (1988), to be codified at 12 C.F.R. 614.4050 (proposed November 3, 1988).

32. One FCB told us that not all FCBs appoint an internal auditor to formalize responsibility for internal controls. This FCB said that FCA regulations specify that the board of directors will ensure that adequate internal controls are in place, but do not require an internal audit function to be staffed.

33. The at-risk capital account does not include System contributions to the Insurance Fund. Although the System includes these contributions on its annual information statement, the FCA believes that it is improper under GAAP for the Insurance Fund to be included as an asset of the System.

34. Both the banks and their associations count this capital on their financial statements, but it is counted only once for regulatory capital calculations.

35. Nine out of 124 direct lender associations did not meet their interim capital standards as of December 31, 1989.

36. The FCA will grant forbearance to an institution in 1990 if its permanent capital ratio is .5% greater than its ratio as of June 1988. In 1991, the institution's ratio would have to 1.25% higher than its June 1988 ratio; in 1992, June 1988 plus 2%; in 1993, June 1988 plus 3%; in 1994, June 1988 plus 4%; and so on until the standard is 7%.

37. The interim standards are determined using each bank's June 30, 1988 permanent capital ratio as "base." An additional one-quarter of the difference between this ratio and the 7 percent standard is added to the base each year, beginning January 1, 1990, to determine the interim standard. The year-end 1989 interim standard shown is therefore as of January 1, 1990.

38. During 1985 and 1986, the System's combined losses of $4.6 billion constituted nearly 6% of its year-end 1985 total assets.

APPENDIX E

THE FEDERAL AGRICULTURAL MORTGAGE CORPORATION

DESCRIPTION

Creation and purpose

The Federal Agricultural Mortgage Corporation (Farmer Mac) is a Federally chartered, private corporation authorized by Title VII of the Agricultural Credit Act of 1987 (Pub. L. No. 100-233, January 6, 1988). The intent of Title VII was to redress perceived inefficiencies in the allocation of credit to agricultural real estate by creating a secondary market for these loans with federally-backed credit enhancement.

Under Title VII, 12 U.S.C. 2279aa-1, Farmer Mac is required to:

(1) in consultation with originators, develop uniform underwriting, security appraisal, and repayment standards for qualified loans;

(2) determine the eligibility of agricultural mortgage marketing facilities to contract with the Corporation for the provision of guarantees for specific mortgage pools; and

(3) provide guarantees for the timely repayment of principal and interest on securities representing interests in or obligations backed by pools of qualified loans.

Organization

By statute, Farmer Mac's permanent Board of Directors consists of 15 members, of which:

(1) five members are elected by holders of common stock that are insurance companies, banks, and other financial institutions;

(2) five members are elected by holders of common stock that are Farm Credit System (FCS) institutions; and

(3) five members representing the general public are appointed by the President and confirmed by the Senate.

The members appointed by the President serve for unspecified terms at the pleasure of the President, and the elected members serve for one year. The President designates one of the appointed members as the chairperson of the Board.

Financial structure

Farmer Mac is authorized to issue common and nonvoting preferred stock and incur liabilities as needed. The Corporation may also require its originators and poolers to purchase nonvoting common stock to obtain funds to meet its administrative expenses, if needed. In November 1988, Farmer Mac sold $21.4 million of common stock to prospective originators and poolers.

As of March 31, 1990, Farmer Mac had received no requests from any prospective marketing facilities to determine their eligibility to pool loans. As soon as it receives such a request, it can begin operations. The date of commencement of operations is, however, uncertain.

When it commences operations, Farmer Mac intends to finance its operations primarily with guarantee fees.[1] Farmer Mac has indicated that it will charge poolers an initial guarantee fee of 1/2 of 1 percent of the principal amount of each pool of qualified loans, and an annual guarantee fee of 1/4 of 1 percent on the unpaid balance of each pool.

Because Farmer Mac is not yet operational, its income to date consists entirely of earnings on its investment portfolio. The portfolio consists of short-term securities purchased with the proceeds from its November 1988 sale of stock. The earnings on the portfolio have not been sufficient to cover operating expenses. Thus Farmer Mac has run operating deficits totaling $1.2 million from the date of incorporation (June 16, 1988) through year-end 1989.

As its business builds, Farmer Mac anticipates that revenue from its guarantee fees, together with investment income, will generate sufficient earnings to meet operating needs, establish a loan loss reserve, and accumulate retained earnings. Should losses from the guarantee program exhaust the loan loss reserve, the Secretary of the Treasury is required to purchase up to $1.5 billion of Farmer Mac obligations upon receipt of certain specified statutory certifications furnished by Farmer Mac.

Business activities

Under the structure established by Congress, lenders or originators will sell their agricultural real estate or rural housing loans to certified marketing facilities, or poolers, approved by Farmer Mac. The poolers will then issue securities backed by the pools of qualified loans. All payments of principal and interest on the pooled loans will be passed through to the buyers of the securities. Farmer Mac will provide credit enhancement by guaranteeing the timely payment of the principal and interest.

By statute, Farmer Mac may provide a guarantee only if a segregated reserve, or retained subordinated participating interest, equal to at least 10 percent of the amount of the loans in the pool has been established by the originators and/or poolers. This recourse provision means that Farmer Mac is not obligated to make any payments until after the reserve is exhausted. Farmer Mac will decide on an individual pool basis whether the level of the cash reserve/subordinated interest should exceed the 10 percent requirement.[2]

Under the subordinated participating interest structure, poolers will issue securities backed by the first 90 percent of the pool with payments guaranteed by Farmer Mac. They may also issue securities backed by the retained subordinated interest, if there is investor demand. However, these securities would not be guaranteed by Farmer Mac.

Principal and interest payments from each pool will be distributed by a Master Trustee (currently Security Pacific National Bank). Payments will be distributed first to the senior security holders and then, to the extent such funds are in excess of the cash reserves needed to provide liquidity, to the subordinated security holders.

Relationship to the Federal Government

The 1987 Act that established Farmer Mac also provided for a number of special ties to the Federal Government. As a result, Farmer Mac is classified as a Government-sponsored enterprise for Federal budget purposes. Farmer Mac's ties to the Federal Government include the following:

(1) Although privately owned, Farmer Mac is chartered by an Act of Congress for a public purpose;

(2) As described previously, Farmer Mac may borrow up to $1.5 billion from the Treasury, should it be unable to perform on its guarantees;

(3) Five of its 15 Board members are appointed by the President and confirmed by the Senate;

(4) Farmer Mac is authorized to use the Federal reserve banks as fiscal agents;

(5) Farmer Mac guaranteed securities are eligible to collateralize Federal, State, and local deposits;

(6) Farmer Mac guaranteed securities are eligible for unlimited investment by national banks, State Federal Reserve System members, and thrifts regulated by the FDIC;

(7) Farmer Mac guaranteed securities will not be subject to State usury laws or to State securities registration laws, unless the State enacts a law during the eight years following the enactment of the 1987 Act which specifically overrules the securities registration laws exemption;

(8) Farmer Mac is subject to GAO audit; and

(9) Farmer Mac is subject to regulatory oversight by the Farm Credit Administration (FCA).

Regulation and oversight

Farmer Mac is chartered as an FCS institution. As a result, the FCA has examination and supervisory authority over Farmer Mac. The FCA is specifically authorized to examine the financial transactions of the Corporation at least once a year. In order to perform the required examinations, the FCA is granted access to all of Farmer Mac's books, accounts, and financial records. Farmer Mac is also required to publish an audited annual report on its condition.

The GAO is required to audit Farmer Mac's guarantee program annually to assess the program's actuarial safety and soundness. GAO may also conduct a financial audit of Farmer Mac when deemed necessary.

By July 1989, Farmer Mac, as required, had submitted underwriting, pool diversification, and security appraisal standards to Congress for review prior to adoption. These standards became effective with the close of a 90-day review period.

FINANCIAL SAFETY AND SOUNDNESS OF FARMER MAC

In order to assess the financial safety and soundness of Farmer Mac, the degree of risk involved in the Corporation's operations due to such factors as business risk, credit risk, interest rate risk, and management and operations risk and also Farmer Mac's capital were examined. In addition, the quality and timeliness of information currently available to the Federal Government and the public concerning Farmer Mac's operations were assessed. The results of these analyses follow.

Business Risk

Overview

Business risk is the exposure to losses from changes in the demand for a firm's products or services which are largely beyond its control. Farmer Mac is affected by changes in the demand for both agricultural real estate and rural housing credit and for its guarantee program. The primary source of Farmer Mac's business risk derives from its involvement with agricultural lending. Because the agricultural sector is still recovering from the turmoil of the last several years, demand for credit is low, particularly among high quality borrowers, Farmer Mac's target market. In addition, Farmer Mac is exposed to the variation in demand for credit historically associated with the agricultural sector.[3]

Another risk faced by Farmer Mac is that investors' initial lack of familiarity with Farmer Mac guaranteed securities may require higher yields to encourage investment. This may limit lenders' ability to offer lower cost loans to borrowers which would eliminate any cost advantage the Farmer Mac program may offer compared to traditional farm lending practices.

The growth of Farmer Mac

The success of Farmer Mac's guarantee program will be determined by the benefits it offers to both lenders and borrowers. Lenders' potential benefits would include increased liquidity from the securitization of loans; a source of stable fee-based income; potentially lower capital requirements for securitized loans; and the ability to transfer interest rate and some credit risk. Borrowers would benefit from an increased access to credit and potentially lower interest rates.[4]

Realization of the benefits will depend upon investor acceptance of Farmer Mac guaranteed securities. To reduce credit risk and thereby enhance investor acceptance, Farmer Mac has adopted a restrictive set of underwriting and repayment standards. Some of these underwriting requirements would effectively limit the program to only newly originated loans.[5] Farmer Mac's standards also include borrower financial requirements that would further limit the demand for its program. This narrowing of the universe of eligible loans would ensure that the Farmer Mac program would be comprised of high quality borrowers. However, it would increase the likelihood that poolers will be unable to issue securities in sufficient volume to realize economies of scale. Fewer or smaller pools would limit active trading in Farmer Mac securities, reduce liquidity, and require higher yields to attract investors.[6] Thus Farmer Mac may be tempted to relax its standards in order to generate a sufficient supply of loans eligible for pooling, relying more on its GSE status to allay investor fears.

Geographical concentration

The demand for agricultural credit varies considerably from region to region. The 1987 Act requires pools to consist of loans that are widely distributed geographically. Farmer Mac has underwriting standards that specify the minimum level of geographic and commodity diversification for each loan pool. However, Farmer Mac's pools are likely to be weighted heavily towards regions with large farm size, little crop diversity, and substantial dependence on Federal commodity programs.

Regulatory risk

Federally regulated financial institutions will be required to provide capital to back any subordinated interest position they retain in loans sold under the Farmer Mac program. The regulators may rule on the required amount by the end of 1990. A large capital requirement would be a significant cost for these institutions and may prevent their assumption of such subordinated interests. This would curtail the participation of these institutions in the Farmer Mac program.

Conclusions and recommendations

Farmer Mac faces substantial long term business risk and risk associated with the initial start-up of the program. Over the long term, the demand for the Farmer Mac guarantee program will be subject to the traditional volatility in the need for agricultural credit. During the start-up phase, the unfamiliarity of the investor and pooler communities with the Farmer Mac program and the potentially large regulatory capital requirements may limit the attractiveness of the program.

Credit Risk

Overview

Farmer Mac's credit risk arises from potential defaults by borrowers on the loans underlying the securities guaranteed by Farmer Mac. However, Farmer Mac's exposure to these losses is a "residual" one, because the 1987 Act requires that a reserve of at least 10 percent be maintained by the pooler or originator against losses from defaults.

Credit risk exposure

The required reserve/subordinated interest may not fully protect Farmer Mac from losses. In the early 1980's, high interest rates raised the value of the U.S. dollar relative to other currencies. The strong dollar raised prices and reduced the world demand for U.S. agricultural products. This caused downward pressure on agricultural income in the U.S., which led to a commensurate decline in the value of agricultural property and the creditworthiness of farmers. Land values fell more than 50 percent in some areas and resulted in substantial defaults on agricultural loans. As a result, many agricultural lenders suffered loan losses well in excess of 10 percent of principal.

The occurrence of another agricultural downturn, similar to the one experienced in the 1980's, would likely result in Farmer Mac's experiencing losses in a substantial number of pools. Moreover, because agricultural real estate lending would probably decline at such a time, Farmer Mac would not be able to count on new guarantee fee income to replace income lost from defaulted loans and to replenish capital.

Credit risk management

Farmer Mac's credit risk management is intended to keep the residual exposure under the guarantee program commensurate with the financial resources of Farmer Mac.

Charter limitations. Farmer Mac is restricted by its charter to guaranteeing securities based on pools of agricultural real estate loans secured by first mortgages on land and/or buildings and rural home loans. These agricultural real estate loans can be no larger than $2.5 million, unless the land securing the loan is 1000 acres or less. Rural home loans are restricted to homes located in communities of less than 2,500 inhabitants and with appraised values of less than $100,000. The charter also restricts the loan-to-value ratio to no greater than 80 percent and requires Farmer Mac to establish underwriting and appraisal standards and standards assuring diversified pools. Finally, the 1987 Act placed annual limits for three years on the aggregate principal amount of loans accepted into the program from poolers other than FCS institutions. The limit for 1990, the final year, is $9.4 billion.

Underwriting standards. Farmer Mac has established additional underwriting standards that cover financial conditions of borrowers, collateral requirements, pool diversification, and other loan conditions. Farmer Mac requires that the loan-to-value ratio at origination not exceed 75 percent, that borrowers have a maximum debt-asset ratio of 50 percent, and that borrowers' projected cash flow be at least 1.25 times total debt service payments. Some of these credit criteria are more restrictive than the statutory limitations.

Farmer Mac has the ability to waive its own underwriting requirements for loans which do not meet certain of the standards, but demonstrate what it calls "compensating strength." A loan with compensating strength is one which exceeds some of the underwriting standards to a degree that makes up for the lack of compliance with other standards. In addition, the borrower must be typical of other sound borrowers in the agricultural production sector.[7] Requests for such waivers must be accompanied by borrower data sufficient to support a finding of "compensating strength" by Farmer Mac.[8]

Decisions to include nonconforming loans in pools will be made on an individual basis by the agricultural finance officials of Farmer Mac, based upon their analysis of the requests. There is no Board-approved policy outlining criteria upon which these decisions will be based. The ability and willingness of management to waive established standards may limit the ability of the underwriting standards to control risk.

Farmer Mac's pool diversification standard will not prevent the concentration of loans in only a few agricultural production sectors. While Farmer Mac's policy states that pools "violating the spirit" of the diversification standard will be rejected, Farmer Mac may itself waive the geographic and commodity requirements of the diversification standards when the pool demonstrates "substantial compliance" with these standards and shows "strength" on at least one of the two standards.[9] The resulting lack of product and/or geographic diversification would expose Farmer Mac to additional credit risk.

Originator/pooler/servicer standards. Farmer Mac has established specific standards for poolers with respect to their level of experience and capital. Poolers and originators are required to hold specified amounts of Farmer Mac capital stock, and poolers are required to have capital of at least $2 million. Standards for servicers cover operating controls, compliance with laws, loan documentation, resolution of delinquencies, and minimum servicing fees. Appraisal standards govern the quality of appraisals performed by originators and also address the monitoring of appraisals by poolers. While Farmer Mac specifies standards for appraisals, there are no explicit qualifications for originator appraisers. Thus the appraisals of collateral backing loans in the pools may vary in quality and may not reflect the true value of the collateral.

The Corporation's recourse policy substantially delays the exposure of Farmer Mac to losses. The burden of making loan payments and paying expenses associated with any workout plan is on the servicer initially, then on the Trustee, should the servicer default on its contract. Farmer Mac would be obligated to assume the servicing and expenses associated with a workout only if the Trustee were to default on its contract with Farmer Mac.

Under Farmer Mac's recourse policy, in the event of borrower delinquencies, the full or central servicer for the loan must cover any shortfalls in scheduled payments and bear all expenses associated with foreclosure procedures. The servicer is reimbursed for the coverage after the foreclosed property is sold. The reimbursement comes first from any collections received from the loan, including the sale of the property. Any remaining losses are then reimbursed by the Trustee from the 10 percent segregated reserves or subordinated interest. (If the servicer defaults, the burden is transferred to the Trustee.)

Servicers are free to establish workout plans in lieu of foreclosure, but do not receive compensation from the reserves if they incur any losses under these plans. Because they are not reimbursed in this case, they may choose foreclosure, rather than workout procedures, even when the workout might result in lower overall cost. By encouraging foreclosure, Farmer Mac's recourse policy could be unnecessarily disruptive of agricultural real estate markets in the event of large-scale delinquencies.

Monitoring of originators/poolers/servicers. Farmer Mac intends to rely on the poolers to monitor originator compliance with the underwriting standards. Farmer Mac will require evidence of compliance and recertification of poolers at least every five years, and will monitor poolers on a continuous basis. However, Farmer Mac currently does not have the staff to monitor adequately a significant number of poolers. Until it develops this capability, Farmer Mac will not know whether the underwriting standards are actually being applied to loans in the pools.

Pricing

Farmer Mac's charter requires that guarantee fees shall be set on an actuarially sound basis. Farmer Mac has indicated that it will charge an initial guarantee fee of 1/2 of 1 percent, and an annual fee of 1/4 of 1 percent, for all pools. This annual fee is smaller than the 1/2 of 1 percent fee the charter allows and is the same for all pools, irrespective of the credit risks of the pools. Management believes that the underwriting standards and the required reserve/subordinated interest will "limit Farmer Mac's exposure to the risk of losses".[10] As a result management does not think that differential pricing for credit risk is necessary.

The decision to charge the same guarantee fee for all pools exposes Farmer Mac to undue credit risk due to an "adverse selection" process. Because all degrees of credit risk are priced equally, loan originators will have an incentive to securitize first the poorest credit risk loans which will pass Farmer Mac's credit analysis procedures. The result may be that the average risk characteristics of Farmer Mac's guarantee commitments will be considerably lower than those of loans of the highest credit quality.

Measuring credit risk exposure

Farmer Mac officials have indicated that their primary method of credit analysis will be a stress test designed to measure the potential exposure to losses from the pool.[11] They report that their test is modeled on the stress tests used by national credit rating agencies which measure the survivability of institutions under exposure to stressful economic scenarios.

The Farmer Mac stress test consists of an analytical determination of the impact of delinquency assumptions specific to the pool upon the statutory reserves and Farmer Mac's projected financial condition. Pools with losses predicted by this analytical procedure to be less than 10 percent of principal (and thus covered by recourse to the statutory reserves) will qualify for the Farmer Mac guarantee program.

The usefulness of an analytical modeling procedure to manage credit risk depends upon the following two factors:

(1) How realistic are the stress test assumptions applied to a pool of loans? How well will the actual loss experience correlate to the results of the model?

(2) How are the results of the test used in the credit analysis and decision-making process?

Because no formal policies have been documented regarding the use of Farmer Mac's stress test, this study focused on the structure and assumptions of the test. The analysis was based on a description of the assumptions and some sample model calculations using historical loan data to represent the performance of potential loan pools covered under the guarantee. Conclusions were drawn from considerations of internal consistency, and from comparisons with stress tests performed by credit rating agencies on municipal bond insurers and mortgage insurers.

The data used by Farmer Mac to construct the typical stress, the foreclosure rate and loss severity, were drawn from the experience of life insurance company agricultural loans over the past twenty years. Because Farmer Mac's pools will be drawn from loans originated and serviced by all agricultural lenders, of which insurance companies will probably represent a small minority, insurance company experience may not be representative of the loan performance of the typical Farmer Mac pool.

Also, the data were drawn from all insurance companies with nationwide lending operations. If Farmer Mac's pools are not comprised of broadly diversified loans, but instead are confined to specific regions or agricultural product sectors, the insurance company data will not truly represent the performance characteristics of pools covered by Farmer Mac's guarantee.

The model does not attempt to relate the default predictions to factors historically related to defaults. Rather, it uses the past default experience to predict the impact of the stress on Farmer Mac's projected financial condition. Thus the model effectively relies upon the assumption that past experience will "repeat itself".

The stress scenario used by the model does not compare favorably with the stressful economic scenarios in models used by nationally recognized credit rating agencies. In particular, these other models stress the loan portfolio over a longer number of years, and assume that no new business is generated during the stress period. Farmer Mac's model only subjects the loan pools to stress for three-year periods, which are not indicative of a true economy-wide stress. Farmer Mac also assumes that additional guarantee fees are generated by a continuing flow of new business during the stress period. The new business assumption is unrealistic in view of the decline in farm lending during the most recent period of economic stress in the agricultural sector.

Conclusions and recommendations

Farmer Mac's underwriting, diversification and appraisal standards appear to provide extensive protection against losses. However, the ability of Farmer Mac to waive its underwriting and loan diversification standards and its current inability to audit its poolers may weaken the effectiveness of these standards in reducing risk. In addition, the shortcomings of the stress test substantially impair its ability to measure risk. Finally, procedures for using the test to screen potential loan pools are not in place. Development and documentation of such procedures need to be completed prior to start-up of business.

Depending on Farmer Mac's use of its waiver powers on underwriting and diversification standards, it may be exposed to credit risk similar to that of regional agricultural lenders (with the exception of its recourse to the servicer to delay exposure and the required reserve/subordinated interest). Agricultural lenders have generally been exposed to a high degree of credit risk, due to the increasing volatility of agricultural incomes, and, hence, of agricultural land values.

If another agricultural downturn similar to that of the 1980's were to occur, there may be substantial losses in many of the Farmer Mac guaranteed pools. As a result, the 10 percent required reserve/subordinated interest may not be sufficient to protect Farmer Mac from such losses.

Interest Rate Risk

Overview

Farmer Mac's business is guaranteeing securities backed by pools of eligible mortgages. The mortgage backed securities (MBS) transfer interest rate risk to the investor. Because Farmer Mac does not plan to purchase mortgages for its own portfolio, issue debt securities, or receive and disburse payments, it largely avoids interest rate risk.

Investments

Farmer Mac's investments are securities issued by other GSEs, almost all with remaining maturities of less than one year. Interest on these investments is expected to be Farmer Mac's sole source of current income, until it begins operations. Given the short-term nature of Farmer Mac's investments, and the relatively low market price volatility of short-term investments, there is little potential risk that the market value of Farmer Mac's investment portfolio will decrease if interest rates rise.

Guarantee fee income

Farmer Mac's income will increasingly consist of guarantee fees as its MBS guarantee program grows. Because Farmer Mac will not hold loans for its own portfolio, the risk of these securities is passed on to the investor.

The sensitivity of mortgage originations and prepayments to changes in interest rates is a source of interest rate risk to the Corporation because Farmer Mac's guarantee income is a fixed percentage of outstanding MBS levels. Mortgages that are eligible for Farmer Mac's pools may react to changes in the level of interest rates in much the same way as other types of mortgages. When interest rates increase, mortgage originations, MBS generation, and mortgage prepayments decline. When interest rates decline, mortgage originations, pool generation, and prepayments increase. Therefore, growth in Farmer Mac's guarantee fee income may decline when interest rates rise and may increase when interest rates decline.

The degree of sensitivity depends upon the interest rate characteristics of the pools. Farmer Mac guaranteed pools can carry either fixed or variable interest rates. Farmer Mac's business plan does not specify any target mix between guarantees of fixed and variable rate pools. Variable rate loans are historically more risky than fixed rate loans to the MBS guarantor. When interest rates decline, variable rate loans are likely to be prepaid and refinanced with fixed rate borrowing. When interest rates increase, however, scheduled or indexed increases in mortgage payments can result in greater credit risk exposure for the guarantor, as borrowers have more difficulty making higher payments. The amount of the prepayment or default risk exposure is difficult to quantify, because it is not known how many fixed and variable rate loans will be in the pools. The Farmer Mac program, however, is intended to encourage fixed rate lending.

Conclusions and recommendations

Farmer Mac is exposed to virtually no risk from its investment portfolio as a result of changes in interest rates. As Farmer Mac's investment portfolio grows, it will become necessary to maintain a portfolio maturity consistent with anticipated liabilities, which will increasingly consist of potential losses from its guarantee program. Farmer Mac's business of guaranteeing pools of mortgages without holding any in its portfolio protects it from extensive interest rate risk. (The risk is transferred to the buyer of the guaranteed security.) Farmer Mac is exposed to the impact of changes in the general level of interest rates on mortgage originations, pool generation, and prepayments. However, this is a risk over which Farmer Mac has little control.

Management and Operations Risk

Overview

Management and operations risk is the exposure to losses from poor decisions or the lack of decision-making on the part of the management. Farmer Mac's management and operating policies in the areas of planning, policy-making, control systems, management information systems (MIS), and personnel administration were examined. The discussion below is based on interviews and contacts with Farmer Mac officials in February and March of 1990. Farmer Mac's staff then consisted of eleven employees, comprising six professional employees and five support staff members.

Planning

Farmer Mac has developed a strategic plan and a business plan. However, its strategic plan only repeats its statutory mission. The business plan incorporates predominantly qualitative objectives, rather than quantifiable goals. While Farmer Mac has set goals, supported by action plans, it has performed little evaluation. There is as yet no formal budget; current budget reporting consists of a monthly cash flow report reviewed by the Board. Farmer Mac expects to evaluate plans and to measure management accomplishment of assigned objectives after it has begun operations.[12]

Farmer Mac's planning process is qualitative in nature. In order to manage operating risk, Farmer Mac needs to develop a formal planning process, including quantitative projections and goals, to direct the efforts of management to achieve the goals, and to evaluate the performance of management and the organization relative to the goals.

The schedules set by management for accomplishing certain aspects of operations in its current plans are unlikely to be met. However, if Farmer Mac's business builds slowly, as it may well do, management may have sufficient time to achieve its planned goals before large-scale operations begin.

Policy making

Farmer Mac's policy-making process works primarily through a management committee structure. The Board sets overall policy and is kept informed by management of initiatives and changes. Board committees are responsible for policy in their respective areas. Advice from external consulting groups is routinely sought. Communication of policy decisions is informal due to Farmer Mac's small size.

Control systems

Currently, Farmer Mac's principal controls consist of internal controls being developed by management, annual audits by a public accounting firm, annual examination by the FCA, periodic review by the GAO, and review by the audit committee of the Board.

Farmer Mac does not have an internal audit department and current business plans do not include establishing one. Thus the external auditors (and to a lesser extent, the FCA) provide the only independent tests for adequacy of controls and compliance with policies and procedures. There is no formal internal process to report on deficiencies. In addition, Farmer Mac's external auditor is also retained by Farmer Mac to act as a consultant, which may compromise the integrity of its auditing function. Farmer Mac should periodically evaluate its need for an internal audit department to insure the existence and proper functioning of its controls.

Management information systems

Only minimal plans for developing MIS systems exist, and no single officer has been assigned responsibility for MIS. Farmer Mac currently has an accounting system to record general business activity, and management reviews the information to determine reasonableness. However, no internal reviews are done to ensure the accuracy of the accounting information. Also, the current business plan does not address MIS needs; management has indicated that future plans will do so.

The concern in the MIS area is that the accounting system alone cannot provide management with sufficient information to make prudent decisions. Nonfinancial data, such as personnel statistics, measures of market condition, and regulatory requirements, are needed. Farmer Mac should have the elements of such a system developed before full-scale operations begin.

Personnel administration

Farmer Mac is in the process of developing personnel systems, policies and procedures to establish functions such as review of staff needs, recruitment, training, performance appraisal, and compensation. There are no formal or informal management succession plans.

Conclusions and recommendations

Farmer Mac has established only elementary controls, consisting of a planning process, an organizational structure, initial control systems, plans to develop management information systems, and basic personnel administration procedures. Although the Corporation is making plans to address most of these issues, the necessary controls may not be in place by the commencement of operations. The lack of controls is a cause for concern and could expose Farmer Mac to a substantial amount of operations risk.

Analysis of Capital

Overview

Farmer Mac's capital currently consists of $20.5 million in stock held by prospective participants in its guarantee program. When it begins program operations, Farmer Mac plans to provide for reserves against losses, and to accumulate retained earnings from guarantee fees. These two sources comprise its protection against its residual exposure to losses from defaults under its guarantee program. It may assess shareholders for additional capital to cover administrative losses.

Equity capital

Common stock. As of December 31, 1989, Farmer Mac's total equity capital was $20.481 million. The components of this equity are shown in Table 1.

Table 1

Stockholders' Equity
($ in thousands)

Class A voting common	$ 670
Class B voting common	500
Class C nonvoting common	1,170
Additional paid-in capital	19,330
Less: Accumulated deficit	(1,190)
Total Equity Capital	$20,481*

* Entries do not add to total due to rounding.

Source: Annual Report 1989, Federal Agricultural Mortgage Corporation

The Class A stock may be held only by entities that are not FCS institutions (banks, insurance companies, or other financial entities). No eligible holder of Class A stock may hold more than 10 percent of the Class A stock outstanding. As of January 10, 1990, Farmer Mac estimated that there were about 1,690 owners of Class A stock. Three institutions held more than 5 percent of the total outstanding Class A stock. Class B stock may be held only by FCS institutions, without limitation as to the percentage of Class B stock outstanding to a single holder. As of January 10, 1990, 25 FCS institutions held class B stock. Each of these two classes of shareholders votes for five directors. Each class of stock is transferable among shareholders entitled to purchase the class.

As part of the initial offering of Class A and Class B stock, Farmer Mac also issued shares of the Class C stock. After a designated separation date, the class C stock will be freely transferable and its ownership will not be restricted to institutions eligible to purchase Class A or Class B stock.

Preferred stock. Although it has not issued any to date, Farmer Mac is also authorized to issue preferred stock. The preferred stock is to be freely transferable and is to be entitled to cumulative dividends and other rights as may be provided at issuance.

In the event of liquidation, the preferred stock has first claim on any assets remaining after satisfaction of obligations. The common stock receives all residual assets with the ratio of distributions on shares of nonvoting common to voting common being 3:1.

Other equity capital. Farmer Mac has announced that it will issue additional equity shares from time to time as needed to new Farmer Mac MBS originators or poolers. In addition, the Corporation is permitted by statute to require each originator and pooler to make additional non-refundable capital contributions to meet administrative expenses. Farmer Mac will issue additional shares of voting common in exchange for such contributions. The Corporation has no corresponding authority in the case of guarantee losses.

Dividends

Although the 1987 Act permits dividends, Farmer Mac does not plan to pay dividends in the near future.[13] Dividend payments are prohibited if Farmer Mac's Board of Directors has not determined that adequate provision has been made for Farmer Mac's reserves or if any obligations are outstanding to the Treasury.

Retained earnings

Farmer Mac had a net loss of $1.085 million over the year ended December 31, 1989, bringing its total loss from inception to $1.190 million.

Sources of reserves for losses

Farmer Mac is required by statute to establish and maintain reserves to protect against losses. These reserves must be provided for out of guarantee fee income. To date, no guarantees have been issued; consequently, Farmer Mac has established no reserves. Farmer Mac officials indicated that the necessary reserve requirement will probably be a percentage of the pool principal amount and will be determined on a pool-by-pool basis. No specific policies have been adopted yet.

Capital adequacy

Once Farmer Mac begins operations, it is essential that Farmer Mac hold capital, particularly reserves and retained earnings from guarantee fees, to protect against losses. Because Farmer Mac has not yet begun program operations, it is difficult to make a determination of an adequate level. The determination needs to address the unique nature of the risks associated with Farmer Mac's operations and statutory provisions.

Farmer Mac's stress test is not adequate to measure the capital needed to provide protection. The stress test is designed only to measure the potential exposure to losses from defaults in pools of loans and does not measure the impact of management risk. This fact, coupled with the shortcomings of its stress assumptions, make its conclusions suspect.

The similarities between the operations of Farmer Mac and those of bond insurers suggest that Farmer Mac's capital adequacy may be best determined using methods developed by credit rating agencies. These agencies take into account not only appropriate survivability tests, but also such risk factors as management quality, ownership structure, underwriting and servicing standards and performance, industry risk exposure, financial and legal risk exposure, and historical financial performance. The determination of an adequate capital level for Farmer Mac must incorporate the analysis, experience, and judgment inherent in these agencies' evaluation processes.

Conclusions and recommendations

Because Farmer Mac has not yet begun program operations, it is difficult to determine the level of capital adequate for protection. The determination of this capital level is subjective. It must take into account Farmer Mac's unique residual loss exposure as well as the other risks posed by its program operations. It must be sufficient to protect Farmer Mac from unforeseen risks. Finally, it must provide incentives to Farmer Mac to manage its risk exposure prudently.

Quality and Timeliness of Information

Farmer Mac submits quarterly uniform call reports and audited annual reports of condition to the FCA. The call reports detail all asset, liability and equity data. Since call reports are uniformly presented by all entities regulated by the FCA and each entity is examined periodically, there appears to be a basis for credible analysis by the regulator.

The Corporation submits an audited annual report to its stockholders. It also submits Form 10-K annually and Form 10-Q quarterly to the Securities and Exchange Commission.

Conclusions and recommendations

Based on the limited activity to date, Farmer Mac reports on a timely basis to the required entities. The reports form a basis for credible analysis.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to examine the safety and soundness of Farmer Mac. Because Farmer Mac has not yet begun its guarantee program, the examination necessarily focused on the potential risks associated with Farmer Mac's operations. Any assessment of the risk posed by future operations is by necessity speculative. More quantitative analysis will be needed once Farmer Mac begins its operations.

Farmer Mac is exposed to a significant level of business risk. In the near term, investors' initial unfamiliarity with the Farmer Mac program and the potentially large regulatory capital requirements for participants may increase the cost of the program, making it unattractive. Over the long term, the demand for the program will reflect the volatility historically associated with agricultural credit.

Farmer Mac's underwriting and pool diversification standards appear to provide extensive protection from credit risk. However, the Corporation's ability to waive these standards and its current inability to audit its poolers may weaken the effectiveness of these standards in reducing risk.

Farmer Mac's decision not to use a risk-based fee structure, but rather to rely solely on underwriting standards and a stress test to protect against defaults, may subject Farmer Mac to an "adverse selection" process. As a result of its need to quickly build up a book of business to offset its current operating losses, Farmer Mac may be lenient in granting waivers of its underwriting standards. Because Farmer Mac intends to price pools with different credit risks equally, loan originators will have an incentive to securitize their poorest credit quality loans first. The result may be that Farmer Mac will be booking business with average risk characteristics that would be marginal when compared to characteristics of loans made using sound agricultural lending practices.

The Corporation will be exposed to modest levels of interest rate risk as a result of fluctuations in mortgage originations, pool generations, and prepayments. Farmer Mac, however, has little control over this risk.

Farmer Mac has established only elementary controls with regard to management and operations. Thus Farmer Mac could be exposed to a substantial amount of operations risk if the needed controls are not in place by the commencement of full-scale operations.

Once Farmer Mac begins guarantee program operations, it is especially important that Farmer Mac be adequately capitalized. As described previously, Farmer Mac may call on the Treasury to purchase up to $1.5 billion of its debt obligations when the required reserve/subordinated interest held by poolers and or/originators and its own reserves are exhausted. Consequently the size of its own reserves and its retained earnings from guarantee fees will determine its ability to withstand large losses without borrowing from the Treasury. It is accordingly recommended that Farmer Mac build adequate levels of reserves and retained earnings from guarantee fees as soon as program operations begin.

The determination of an adequate level of capital for Farmer Mac must address the unique nature of the risks involved in its operations and provide an incentive for Farmer Mac to manage its risk exposure prudently. In view of the similarities between Farmer Mac's operations and those of bond insurers, Farmer Mac's capital adequacy may be best determined using the framework and methods developed by credit rating agencies.

Farmer Mac currently reports information on its limited activity on a timely and complete basis to required entities. This information provides a basis for credible analysis.

ENDNOTES

1. "Offering Circular, Federal Agricultural Mortgage Corporation," The First Boston Corporation, November 23, 1988, p. 27.

2. Federal Agricultural Mortgage Corporation Securities Guide, December 28, 1989, p. 801.

3. See Hiemstra, Stephen W., Koenig, Steven R., and David Freshwater, "Prospects for a Secondary Market for Farm Mortgages," U.S. Department of Agriculture, Agricultural Economic Report Number 603, December 1988, pp. 9-23.

4. *Ibid*., pp. 36ff and 47-48.

5. *Ibid*., pp. 33-36.

6. *Ibid*., pp. 33ff.

7. "Credit Underwriting, Loan Repayment and Security Appraisal Standards," Federal Agricultural Mortgage Corporation, Submission to U.S. Congress, June 30, 1989, Credit Standard 9.

8. Federal Agricultural Mortgage Corporation Securities Guide, *op. cit*., p. 421.

9. "Loan Diversification Standards," Federal Agricultural Mortgage Corporation, Submission to U.S. Congress, July 18, 1989, Loan Diversification Standards 1 and 7.

10. Letter from Farmer Mac to Michael Basham, May 2, 1990, p. 4.

11. "Statement of Henry D. Edelman, President and CEO, to the Policy Research and Insurance Subcommittee of the Committee on Banking, Finance and Urban Affairs of the U.S. House of Representatives", Federal Agricultural Mortgage Corporation, September 12, 1989, p. 2.

12. In its May 2, 1990, letter to Michael Basham, Farmer Mac indicated that a budget has now been formalized for the last two quarters and will soon be done on a monthly basis. In addition, Farmer Mac reported that it has begun to evaluate the business plan and to measure management performance in accomplishing the assigned objectives.

13. Offering Circular, *op. cit*., p. 8.

APPENDIX F

STUDENT LOAN MARKETING ASSOCIATION

DESCRIPTION

Creation and purpose

The Student Loan Marketing Association (Sallie Mae) was created by the Congress in 1972 as part of a comprehensive set of amendments to the Higher Education Act of 1965 (the "Act"). The Act, among other things, established the Guaranteed Student Loan Program (GSLP) in 1965 to make credit available to an expanding student population in higher education.

In 1972, Congress created Sallie Mae as a stockholder-owned corporation for the purpose of providing a secondary market for guaranteed student loans. Prior to the establishment of Sallie Mae, potential lenders were reluctant to participate in GSLP, because guaranteed student loans were relatively illiquid long-term assets that tied up bank resources. Also, interest rates were determined administratively by the Government and capped under statute at what sometimes proved to be below-market rates. The 1972 charter authorized Sallie Mae to purchase student loans and undertake a program of collateralized lending to financial institutions and other GSLP participants through so-called "warehousing advances".

Guaranteed loans purchased by Sallie Mae. Sallie Mae purchases loans guaranteed by the Department of Education and the Department of Health and Human Services. A brief history of the loan programs follows. They include:

Department of Education GSLP

(1) Stafford loan program. The Stafford loan program was begun in 1965 and now is the largest Department of Education student loan guarantee program. Under this program, the student pays interest at below-market interest rates that are determined under statute and the U.S. Government pays a "special allowance" that is added to the rate paid by the student. The purpose of the special allowance is to bring the rate of interest earned by the holder of student loans up to a market rate of interest. Until the interest rate cap of 12 percent was removed in 1978, however, the interest rate earned by the investor in Stafford loans was periodically below the market rate.

Currently, the special allowance is determined quarterly and is calculated to provide the lender with an interest rate that is 3.25 percentage points above the average of the bond equivalent rate on all 91-day Treasury bills auctioned during the immediately preceding calendar quarter. The Federal Government pays all of the interest on Stafford loans during the period when the student is in school and for a grace period of generally six months after the student is no longer enrolled on at least a half-time basis.

(2) PLUS and SLS Loans. The Education Amendments of 1980 (Pub.L. No. 96-375) authorized the Department of Education to establish the PLUS loan guarantee program to provide a supplemental source of education loan funds for parents of dependent undergraduates. The GSLP was expanded further under the Omnibus Budget Reconciliation Act of 1981 (Pub.L. No. 97-35) to provide supplemental loans for independent undergraduate students and graduate students -- the SLS program. The interest rate on PLUS and SLS loans is determined annually, effective July 1 of each year, by adding 3.25 percentage points to the bond equivalent rate of the last auction of 52-week Treasury bills held prior to June 1 of each year. When the rate indicated by the formula (exclusive of the rate cap) exceeds 12 percent, the same special allowance formula used for Stafford loans brings the yield to a market rate. The Federal Government does not pay interest, other than the special allowance if any, on PLUS and SLS loans, and the borrower must begin making payments 60 days after the loan is disbursed.

In 1976, the primary responsibility for administering GSLP was transferred from the Federal Government to the States, and financial incentives were provided to encourage States to establish their own guarantee agencies. States and nonprofit student loan guarantee agencies currently are the primary guarantors of GSLP loans, with the Federal Government providing reinsurance.

Department of Health and Human Services

The Health Education Assistance Loan (HEAL) program was enacted in 1976 (Pub.L. No. 94-484, 42 U.S.C. 294a)) to provide guaranteed loans for graduate students in the health professions. Sallie Mae was authorized to purchase HEAL loans from the inception of the HEAL program. Most HEAL loans are made at variable interest rates that are determined quarterly, based on the average of the bond equivalent rates on 91-day Treasury bills auctioned during the preceding quarter, plus 3.0 percentage points. Although the student need not begin repaying the loan until the end of a grace period following fulltime student or medical resident training, interest accrues from the time the loan is disbursed until the loan is repaid. There is no special allowance paid by the Government to subsidize the interest rate paid by the student.

Warehousing advances and other activities. Amendments to the Act enacted in 1980 (Pub.L. No. 96-374) broadened Sallie Mae's product mix and financing capabilities. Sallie Mae gained greater flexibility to make advances to finance guaranteed student loan portfolios held by other GSLP participants and was authorized to provide advances to State and nonprofit agencies to fund their student loan operations.

The range of products that Sallie Mae can offer was further expanded in 1981 (Pub.L. No. 97-35) to include authority to purchase, service, sell, and make warehousing advances on education loans not insured by the Federal Government. The 1981 amendments also authorized Sallie Mae to buy, sell, hold, underwrite, and deal in student loan revenue bonds issued by State and nonprofit agencies (including providing letters of credit to back advances from other lenders). Sallie Mae can insure GSLP loans in the event the Secretary of Education determines that the availability of credit in a particular area is being impaired, because no existing State or nonprofit student loan guarantee agency is able to provide a program of loan insurance for such borrowers. In 1981, Sallie Mae was also authorized, subject to certain express limitations,"to undertake any other activity which the Board of Directors of the Association determines to be in furtherance of the programs of insured student loans . . . or will otherwise support the credit needs of students" (20 U.S.C. 1087-2(d)(1)(E)).

The 1986 amendments (Pub.L. No. 99-498) broadened Sallie Mae's ability to provide financing to educational institutions, by authorizing Sallie Mae to sell, hold, insure, or underwrite obligations to finance higher education facilities. The 1986 amendments restricted somewhat Sallie Mae's broad authority to undertake "any activity" by clarifying the Act to state that Sallie Mae is not authorized to "acquire, own, operate, or control any bank, savings and loan association, savings bank or credit union" (20 U.S.C. 1087-2(d)(1)(E)(ii)).

Organization

Sallie Mae is governed by a 21-member Board of Directors composed of 7 Directors appointed by the President of the United States, 7 Directors elected by educational institutions that hold its voting common stock, and 7 Directors elected by financial institutions that hold its voting common stock. The Chairman of the Board is designated by the President of the United States from among the members. Sallie Mae's Board consists entirely of outside Directors; no officers or employees of Sallie Mae serve on the Board. Ownership of Sallie Mae is vested in holders of its voting common, nonvoting common and preferred stock.

Sallie Mae's principal office is in Washington, D.C. Sallie Mae had 2,084 employees on December 31, 1989, including 1,342 employees at Sallie Mae's loan servicing centers located in Florida, Kansas, Pennsylvania, Texas and Virginia. For a more complete discussion of Sallie Mae's organization, see the Management and Operations Risk section of this report.

Business activities

Sallie Mae purchases education loans and makes warehousing advances to financial institutions and others that are engaged in education lending. Sallie Mae's clients include commercial banks, thrifts, educational institutions, and public sector entities.

Sallie Mae is the major financial intermediary for education credit, directly holding over $16 billion of student loans as of December 31, 1989 and financing an additional $8.6 billion of student loans held by other financial and educational institutions. There are approximately 4 million education borrowers whose loans have been purchased by Sallie Mae from approximately 1,600 loan sellers. Sallie Mae has approximately 150 education loan warehousing advance customers and provides operational support to 332 clients. Such operational support consists principally of computerizing GSLP originations and interim administration of GSLP, and soon HEAL, loans prior to purchase by Sallie Mae.

Table 1
Sallie Mae
Student Loan Portfolio
As of December 31, 1989

PROGRAM	Principal ($ mil.)	PERCENT OF PORTFOLIO
Stafford	13,477	84.1
PLUS/SLS	1,167	7.3
HEAL	1,224	7.6
Privately insured	161	1.0
TOTAL	16,029	100.0

Source: Sallie Mae

All loans currently being purchased by Sallie Mae under the GSLP (including the PLUS and SLS loans) are guaranteed by State or nonprofit agencies with Federal reinsurance. Sallie Mae has a direct claim on the State or nonprofit agency. The State or nonprofit agency collects from borrowers and has an agreement with the Secretary of Education under which the Federal Government pays up to 100 percent of the amount expended by the guarantor to discharge its guarantee obligation with respect to default claims, provided the loan has been properly originated and serviced. Thus, Sallie Mae has an indirect claim on the Government guarantee through State and nonprofit agencies.

The Department of Health and Human Services guarantees HEAL loans directly to eligible lenders. In contrast with the claims process under GSLP, lenders in the HEAL program, including Sallie Mae, make claims directly to the Federal Government on defaulting HEAL loans. The main source of credit risk associated with investment in student loans is that the principal and/or interest on loans may not qualify for insurance if they are not properly serviced.

While the student is in school, the Federal Government generally pays all of the interest on Stafford loans, and no principal payments are due until the end of a grace period after the student is no longer in school at least half time. Originators usually hold Stafford loans during the period that the student is in school, when it is relatively inexpensive to service them. Stafford loans generally begin repayment within six months after the student leaves school with repayment periods

Table 2
Selected Financial Data for Sallie Mae

(year-end, $millions)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Student Loans, Net	1,217	2,072	3,222	4,582	5,573	6,798	8,175	10,043	13,202	16,029
Warehousing Advances	1,422	2,755	3,191	3,285	4,230	5,481	6,527	8,357	7,989	8,601
Cash and Investments	40	168	852	942	1,396	1,732	3,122	3,836	6,567	9,840
Other Assets	103	176	242	309	421	439	408	628	870	1,018
Total Assets	2,782	5,171	7,507	9,119	11,620	14,450	18,232	22,864	28,628	35,488
Stockholders' Equity	51	68	103	503	577	676	655	684	801	1,038
For Year Ended December 31										
Net Interest Income ($mil)	27	50	90	146	198	238	264	313	373	418
Net Interest Margin (%)	1.28	1.26	1.47	1.83	2.14	2.04	1.82	1.77	1.63	1.49
Net After-tax Income ($mil)	9	18	38	67	99	123	145	181	225	258
Debt to Equity Ratio* (%)	53:1	75:1	72:1	17:1	14:1	16:1	20:1	25:1	28:1	33:1
Return on Common Stockholders' Equity* (%)	20.22	30.63	44.82	33.82	26.05	19.85	22.73	28.28	30.29	31.72

*Assumes conversion of convertible subordinated debentures.

Source: Sallie Mae Financial Reports

of between five and ten years. Sallie Mae usually purchases Stafford loans just prior to the time the student begins making payments. Sallie Mae also buys "in-school" loans and those in repayment.

Sallie Mae makes warehousing advances and extends lines of credit to banks and other financial institutions, State and nonprofit student loan authorities for use in maintaining or expanding their education credit portfolios. Of the $8.6 billion of warehousing advances outstanding on December 31, 1989, $2.9 billion had floating rates indexed to the 91-day Treasury bill auction averages, $4.0 billion were indexed to the London Interbank Offered Rate, and $1.7 billion were at fixed rates.

In addition to loan purchases and warehousing advances, Sallie Mae:

(1) offers lenders loan servicing systems and services to streamline their origination and servicing of student loans prior to their sale to Sallie Mae;

(2) provides electronic linkages to loan guarantors;

(3) finances college and university facilities; and

(4) offers credit support services, including letters of credit to back student loan revenue bonds.[1]

On December 31, 1989, Sallie Mae's assets totaled $35.5 billion, including $16.0 billion of student loans, $8.6 billion of warehousing advances, $9.8 billion of cash and investments and $1.0 billion of other assets, principally accrued interest receivable. Sallie Mae's investment portfolio includes approximately $0.7 billion in student loan revenue and academic facility bonds. (see Table 2).

Sallie Mae holds 75 percent of the outstanding voting common stock of the College Construction Loan Insurance Association (Connie Lee). This ownership represents an investment of approximately $53 million. Sallie Mae has committed to Connie Lee to make an additional equity investment of up to $25 million. Sallie Mae's commitment was issued on December 15, 1988 to enable Connie Lee to commence reinsurance operations. The commitment expires on December 31, 1997, and until such date, cannot be revoked by Sallie Mae. However, the commitment will terminate when Connie Lee commences direct insurance activities, expected to be later in 1990. Accordingly, Sallie Mae's capital commitment would expire at such time. Sallie Mae is not responsible, directly or indirectly, for the debts and obligations of Connie Lee.

Table 3
Sallie Mae Outstanding Debt

(year-end, $millions)

	1984	1985	1986	1987	1988	1989
U.S. Dollar						
Less Than One Year	2,437	3,000	4,517	6,571	9,522	14,684
Greater Than One Year						
Fixed Rate	2,508	3,313	4,020	5,544	7,783	9,255
Floating Rate	5,600	6,270	7,255	7,635	7,810	7,976
Foreign Currency*						
Floating Rate	0	0	53	270	270	161
Fixed Rate	0	612	1,096	1,222	1,398	1,513
Total	10,545	13,195	16,941	21,243	26,783	33,588

*Includes U.S. dollar denominated debt that is indexed to foreign currencies.

Source: Sallie Mae Financial Statements and Monthly Sallie Mae reports on outstanding debt.

Financial structure

An appropriation of $5 million was authorized to the Secretary of Health, Education and Welfare (HEW, whose functions regarding GSLP were subsumed under the new Department of Education when it was created under the Department of Education Organization Act, Pub.L. No. 96-88, 20 U.S.C. 3401 et seq., dated October 17, 1979) to make advances, to be repaid with interest, "for the purpose of helping to establish the Association". However, Sallie Mae did not use the $5 million of Federal start-up funds, but instead borrowed from private sources to begin operations.

In June 1974, Sallie Mae completed its first sale of equity shares, comprising approximately $25 million of voting common stock to GSLP lenders. Sallie Mae also sold federally guaranteed debt instruments in the market until mid-1974, when Sallie Mae began conducting all of its debt financing activities through the newly-created Federal Financing Bank.[2] Sallie Mae financed its activities through the Federal Financing Bank under a Department of Education guarantee until January 1982, when Sallie Mae began its current exclusive reliance on nonguaranteed borrowing in the capital markets. In March 1981, the Federal Financing Bank and Sallie Mae agreed that Sallie Mae would borrow exclusively in the private market after a transition period (between March 1981 and January 1982) during which Sallie Mae borrowed both in the market and from the Federal Financing Bank. The Department of Education authority to guarantee Sallie Mae obligations expired on October 1, 1984 (20 U.S.C. 1087-2(h)(2).

Currently, Sallie Mae obtains funds for its operations primarily from sales of debt securities. As of December 31, 1989, Sallie Mae liabilities totaled $34.5 billion, including $15.0 billion of short-term borrowing, $18.6 billion of long-term notes, and $.9 billion of other liabilities, principally accrued interest payable. The long-term note total includes $4.9 billion held by the Federal Financing Bank (fully guaranteed by the Department of Education), at a variable interest rate of .125 percent above the 91-day Treasury bill rate. Practically all Federal Financing Bank-held Sallie Mae debt matures in 1995 ($2.7 billion) and 1996 ($1.6 billion). All Sallie Mae debt held by the Federal Financing Bank will need to be redeemed using funds from private sources.[3]

Sallie Mae's debt on December 31, 1989, included $1.4 billion of debt denominated in foreign currencies or indexed to relationships between the U.S. dollar and foreign currency values. Sallie Mae has entered into currency exchange agreements (currency swaps) under which Sallie Mae has converted its foreign currency liabilities to U.S. dollar liabilities. For further discussion of swaps, see the Credit Risk subsection below.

Relationship to the Federal Government

The Higher Education Act enumerates Sallie Mae's limited purposes and authorities and grants Sallie Mae various ties to the Federal Government. Investors perceive Sallie Mae to have a special relationship to the Federal Government, because of these ties. As a result, Sallie Mae has been able to lower interest costs on its debt.

These special links to the Government include:

(1) Use of the Federal Reserve banks as Sallie Mae fiscal agents (20 U.S.C. 1087-2(l)), which includes use of the book-entry system maintained by the Federal Reserve;

(2) Exemption of Sallie Mae obligations from State and local income taxes as to interest (20 U.S.C. 1087-2(l));

(3) Eligibility of Sallie Mae obligations for purchase without limit by federally-regulated financial institutions (12 U.S.C. 24(Seventh));

(4) Eligibility of Sallie Mae obligations to collateralize Treasury tax and loan accounts (20 U.S.C. 1087-2(l));

(5) Eligibility of Sallie Mae obligations for purchase by the Federal Reserve System in open market operations (20 U.S.C. 1087-2(l));

(6) Exemption of Sallie Mae from State and local taxes, except real property taxes (20 U.S.C. 1087-2(b)(2));

(7) Exemption of Sallie Mae securities from registration with the Securities and Exchange Commission under the Securities Act of 1933 (20 U.S.C. 1087-2(l));

(8) Treatment of Sallie Mae securities as Government securities for the purposes of the Securities Exchange act of 1934 (20 U.S.C. 1087-2(l));

(9) Authority to conduct business without regard to State qualification laws (20 U.S.C. 1087-2(i)(4));

(10) Exemption of Sallie Mae's indebtedness incurred prior to September 30, 1992 from the United States priority claim on Sallie Mae in the event of a default on Sallie Mae obligations guaranteed by the Department of Education (20 U.S.C. 1087-2(l));

(11) Authority to issue up to $1 billion of obligations to the Treasury, at Treasury discretion (20 U.S.C. 1087-2(h)(5)); and

(12) Authority to sell or issue obligations on the security of guaranteed student loans to the Federal Financing Bank without limit as to amount (20 U.S.C. 1087-2(h)(6)).

Regulation and oversight

No Federal agency has statutory authority to regulate Sallie Mae's business operations or its capital adequacy. The Higher Education Act specifically states that

> Nothing in this section (pertaining to Department of Education and Treasury approval of Sallie Mae obligations) shall be construed so as to authorize the Secretary of Education or the Secretary of the Treasury to limit, control, or constrain programs of the Association or support of the Guaranteed Student Loan Program by the Association (20 U.S.C. 1087-2(h)(2)).

The Department of Health and Human Services is also without authority to regulate Sallie Mae.

Sallie Mae is required to submit a report of its annual audit by a certified independent auditing firm to the Secretary of the Treasury and is required to provide the Secretary with access to its books and records (20 U.S.C. 1087-2(j) and (k)). The Secretary, in turn, is required to report to the President and Congress on Sallie Mae's financial condition, including "a report of any impairment of capital or lack of sufficient capital noted in the audit." (20 U.S.C. 1087-2(k)). In recent years, Sallie Mae has submitted its publicly-available annual reports to the Secretary of the Treasury and other financial information upon request of Treasury staff. The Treasury has not noted any impairments of Sallie Mae capital.

Sallie Mae also is required to submit annual reports of its operations and activities to the President and the Congress (20 U.S.C. 1087-2(n)). We have no independent knowledge of how these reports are used.

Like other investors in federally-insured student loans, Sallie Mae is subject, from time to time, to the same type of review of its student lending operations that applies to other investors in federally insured student loans. Such reviews are undertaken by the General Accounting Office, Department of

Education, and the Department of Health and Human Services. These reviews are confined to Sallie Mae guaranteed loan servicing operations and do not analyze the overall business operations and capital of the firm.

The Department of Education's Office of Postsecondary Education conducts reviews of Sallie Mae's compliance with the Department of Education's due diligence regulations (pertaining to loan servicing) for lenders participating in GSLP. The Department of Education Inspector General also conducts periodic reviews of Sallie Mae's participation in GSLP. The Department of Education is reviewing Sallie Mae's loan servicing operation in Herndon, Virginia, but has not completed its audit.[4] The findings and recommendations of these agencies may result in regulatory or legislative changes affecting the GSLP and Sallie Mae loan servicing operations.

Sallie Mae is required to obtain the Secretary of the Treasury's approval of its issues of debt obligations (20 U.S.C. 1087-2(h)).

The authority of the Department of Education to approve Sallie Mae obligations expired on October 1, 1984, when the authority to guarantee obligations issued by Sallie Mae expired (20 U.S.C. 1087-2(h)(2)).

FINANCIAL SAFETY AND SOUNDNESS OF SALLIE MAE

In order to assess the financial safety and soundness of Sallie Mae, the degree of risk involved in Sallie Mae's operations due to such factors as business risk, credit risk, interest rate risk, and management and operations risk were examined as well as Sallie Mae's capital. The quality and timeliness of information currently available to the Federal Government and the public concerning Sallie Mae's operations were also assessed. The results of these analyses follow.

Business Risk

Sallie Mae's business risks are largely related to its statutorily-defined focus of making credit available for higher education. Sallie Mae's major source of competition is from lenders that want to hold student loans, particularly during the period when the student is in school, when the costs of servicing student loans are lowest. Sallie Mae's size, and focus in the federally guaranteed loan area, however, mean that Sallie Mae is better equipped than most student lenders to devote resources to the development of the technologically advanced software systems that are critical to servicing student loans successfully.

Charter limitations on business

Sallie Mae's charter limits its investments largely to student loans, warehousing advances, other student loan related assets, student loan revenue bonds and college facilities bonds. Sallie Mae's competitors, particularly private financial institutions, are not subject to similar restrictions on their investments and can pursue alternative lines of investment if student lending becomes relatively unprofitable.

Legislative and regulatory changes

Amendments to Federal statutes and regulations can and have changed the scope of Sallie Mae's charter as well as the characteristics of the Federally-backed student loans in which Sallie Mae invests. Amendments to the Higher Education Act have affected Sallie Mae's operations by adding new student loan programs that are eligible for Sallie Mae to purchase. All student lenders are on an equal footing, however, with regard to changes in student loan program requirements, such as the due diligence requirements that must be met before a claim can be made on a Federal guarantee. In addition, any reductions in Federal spending for the special allowance may reduce the interest rate earned by all holders of federally guaranteed student loans.

Industry competition

Since Sallie Mae's charter does not authorize it to originate student loans, except in limited circumstances, it is reliant on the decisions of originators to sell, rather than retain, student loan assets once originated. In the secondary market, Sallie Mae is subject to competition from several large commercial banks as well as agencies or designated nonprofit institutions established in many States to provide secondary markets for student loans, many of which provide products and services similar to those offered by Sallie Mae.

Sallie Mae held 28 percent of outstanding student loans that were guaranteed by the Department of Education as of September 30, 1989 (latest available).[5] Sallie Mae's share was well ahead of the 4 percent held by Citibank, the second largest holder. The top 25 holders, including Sallie Mae, private financial institutions and State nonprofit student loan agencies, held 52 percent of GSLP loans on that date.

Geographic concentration

Sallie Mae does not have a significant amount of geographical risk, because most of the student loans it purchases are guaranteed.

Changing demographics

Demographic changes and economic conditions can also affect the supply of student loans originated and available for Sallie Mae to purchase. According to U.S. Bureau of the Census projections, the population under age 25 will decline by approximately seven percent between 1990 and 1995, while total enrollment in higher education is expected to decline by three percent. A decline in the traditional college age population in the 1980s, however, did not translate, as many expected, into a decline in actual college enrollments. Growth to date in the nontraditional student population -- women and minorities, for example -- has more than offset the decline. Moreover, the cost of higher education continued to rise, making financial assistance necessary for a greater proportion of the student population.[6]

Changes in technology

Sallie Mae's competitive success has been increasingly tied to its operational capabilities and derivative products offered to client institutions. Technologically advanced automated systems are required today to comply with guaranteed student loan program due diligence requirements in a cost-effective manner.

Sallie Mae's focus on the student loan business and economies of scale give Sallie Mae a natural competitive advantage in developing its technology to expand its services to the student loan industry.

In addition to developing its Consolidated Loan Accounting Software System (CLASS) for loans that are owned and serviced by Sallie Mae, the firm has developed a derivative system, called PortSS, offered to clients for use on their own computer hardware in connection with servicing client-owned guaranteed student loans. Alternatively, Sallie Mae offers to originate and service loans on client institutions' behalf through its proprietary ExportSS service.

Conclusions and recommendations

Sallie Mae is not subject to a large degree of business risk. The major concern is that its charter limits its focus to the student loan and related markets. If not offset by other factors, such as an increase in the proportion of students that need student loan credit, shrinkage in the student population expected by the Census Bureau in the next five years could affect Sallie Mae's ability to expand its asset base and therefore its profits.

Credit Risk

Credit risk is the risk of loss due to default. Sallie Mae is not exposed to credit risk on its fully federally guaranteed or reinsured student loan portfolio, if the loans are documented and serviced properly. Sallie Mae's credit risk stems from four major sources:

(1) counterparty exposure in interest rate and currency exchange agreements (swaps);

(2) exposure to State and nonprofit student loan guarantee agencies in the event that the Federal Government reinsures less than the full principal amount of the student loan;

(3) exposure to financial institutions and others to whom Sallie Mae makes warehousing advances; and

(4) exposure to the student borrower in the event a student loan is not documented and serviced properly.

Internal assessment of credit risk

The Sallie Mae Credit Analysis Division makes a subjective judgment as to the final credit risk classification of each counterparty and takes into consideration the amount of existing exposure to the counterparty in its approval determinations. While Sallie Mae has informal procedures and credit standards, it has no formalized, written standards for:

(1) assessing the credit of its counterparties or the degree of credit risk concentration that is acceptable;

(2) determining the amount of credit risk that is acceptable for particular types of transactions[7];

(3) determining the amount of collateral that should be obtained from counterparties; or

(4) assuring that the quality and mark-to-market value of collateral are maintained.

Credit risks for individual transactions are analyzed according to the degree of risk that is assessed by the Sallie Mae Credit Analysis Division. No formalized credit policies exist with respect to how an institution should be rated. The

Credit Analysis Division uses private rating agency information, financial statements, information obtained directly from the client and, occasionally, on-site visits to assess credit risk.

Not all credit risks are collateralized. While GSLP advances, including warehousing advances, are always collateralized in amounts at least equal to the loan proceeds, Sallie Mae's investment portfolio assets and currency swaps are generally unsecured. Most educational facilities finance transactions and a small amount of interest rate swaps have been partially or completely collateralized. Collateral may be composed of student loans, Treasury and GSE securities, or other marketable securities, such as mortgage-backed securities, and whole mortgage loans. Marketable collateral is marked to market every two weeks.

Management of Sallie Mae has indicated that it plans to formalize policies in the credit risk area and has acted to devote more resources to the Credit Analysis Division. In this connection, a Senior Vice President for Credit was hired effective December 5, 1989, and responsibility for supervision of the Credit Analysis Division was moved to the Executive Vice President (General Counsel) from the Executive Vice President (Chief Financial Officer). Moreover, Sallie Mae intends to expand the size of the Credit Analysis Division in 1990.

The portion of Sallie Mae's internal business plan for calendar year 1990 pertaining to credit risk notes Sallie Mae's informal system of credit controls, policies and reporting mechanisms. To improve and better communicate measures to control credit risk, in 1990, the Credit Analysis Division plans to:

(1) formalize a system to expand analysis of counterparty risk, whether for loans, swaps or investments;

(2) formalize policies to limit concentration of counterparty risk on loans, swaps and investments;

(3) formalize policies to limit concentration of currency risk; and

(4) expand Sallie Mae's system to monitor and report asset quality and adherence to the formalized credit policies.

Exposure on swaps

The risk that the counterparty will default on its swap obligation is the primary risk in interest rate and currency swap transactions. Unlike default on a loan, default of a swap counterparty does not necessarily result in loss of interest or principal, but results in exposure to the interest rate or foreign currency risk that was present before the swap was undertaken.

On December 31, 1989, Sallie Mae had outstanding about $16 billion notional amount (face amount) of interest rate swaps, in which the parties agree to exchange streams of interest payments, and $3 billion principal amount of currency swaps, in which the parties agree to make periodic payments in U.S. dollars or foreign currencies or to make payments based on the prevailing market relationships between (or among) currencies. Sallie Mae estimated its credit exposure on interest rate swaps to be $508 million on that date, while its exposure on currency swaps was $576 million.

The amount of exposure on an interest rate or currency swap is calculated by Sallie Mae as the discounted present value of the difference between the stream of payments to Sallie Mae on the original swap and the stream of interest payments payable to Sallie Mae on the replacement swap. If interest rates (and or currency exchange rates) do not change, Sallie Mae can enter into another swap and restore the lost payment flows. In this event, Sallie Mae's exposure would be the transaction cost.

Interest rate swaps involve only the exchange of interest payment streams on a notional principal amount and no risk of principal loss. Sallie Mae generally pays interest at a floating rate and receives a fixed interest rate in its interest rate swaps. In terms of interest rate risk exposure, Sallie Mae stands to benefit if a swap counterparty fails when interest rates increase. Conversely, it stands to lose if a counterparty fails when interest rates decline. Sallie Mae mitigates the risk of losses by engaging in swaps with counterparties that it judges to be creditworthy and by negotiating contract terms to provide risk protection, including netting of swap exposures and, in some cases, obtaining collateral coverage.

Sallie Mae has more exposure on its currency swaps, because currency swaps involve principal risk as well as exchange rate risk. Since the majority of currency swap partners are foreign institutions, the degree of credit review that is undertaken with a domestic firm is not possible. Therefore, Sallie Mae engages in currency swaps only with counterparties that Sallie Mae rates highest from a credit analysis standpoint.

Concentration of swap risk with a single or a limited number of counterparties is a potential problem and could magnify the potential credit risk exposure. Over 75 percent of Sallie Mae's exposure on currency swaps is with seven counterparties, while the top three counterparties account for about 25 percent of Sallie Mae's credit exposure on interest rate swaps.

Sallie Mae had swap positions with a subsidiary of Drexel Burnham Lambert, which were closed after Drexel entered bankruptcy. Closing the swap position with Drexel's subsidiary resulted in interest rate exposure that Sallie Mae hedged in the cash market until a swap could be arranged with another counterparty.

As with other credit exposure of the firm, Sallie Mae does not have written standards to assess swap counterparty risk, nor does Sallie Mae have documented limits on the amount of risk that can be taken with each swap partner. Sallie Mae does a credit analysis of each swap counterparty, although there is no formalized standard for such analysis. Sallie Mae occasionally requires collateral from its swap counterparties, but does not post collateral with its counterparties. As a result of its choice of counterparties, Sallie Mae has experienced only one small loss on swaps. That was a $300,000 loss in the case of premature termination of the Drexel swaps. Sallie Mae plans to document its policies formally regarding credit analysis of its swap counterparties with written procedures and standards.

Sallie Mae's Credit Analysis Division analyzes the credit risk of each swap counterparty when a swap is initiated. The financial condition of Sallie Mae's counterparties is generally monitored quarterly, while interest rate and currency risk are monitored monthly.[8]

Exposure to State and nonprofit agencies

Sallie Mae is precluded by Federal statute from making student loans directly, except in narrowly defined circumstances that have not occurred to date. Therefore, Sallie Mae must acquire its portfolio from primary lenders, such as financial institutions and State and nonprofit student loan agencies. Sallie Mae's holdings of student loans totaled $16 billion on December 31, 1989, most of which were GSLP loans for which the Federal Government provides 100-percent reinsurance or HEAL loans that are directly and fully guaranteed by the Federal Government.

GSLP loans today are insured by State and nonprofit agencies, also known as "guarantor agencies", with reinsurance from the Federal Government. State and nonprofit student loan guarantor agencies collect a fee of up to 3 percent of the student loan at the time of origination as an insurance premium. Prior to the establishment of Federal reinsurance in 1976, the

Department of Education guaranteed student loans directly to the holder, whether the holder originated the student loans or purchased them in the secondary market. In the HEAL loan program, Sallie Mae and other holders are insured directly by the Department of Health and Human Services.

Greater Federal focus on reducing the Government's credit exposure under guarantee programs in recent years led the Department of Education in 1986 to tighten its guarantees by scaling down the amount of reinsurance from 100 percent to as little as 80 percent of the claim, depending on the loss ratio experienced by the State or nonprofit student loan guarantee agency. If a guarantee agency has a default rate of 5 percent or less, 100 percent Federal reinsurance applies; for loss rates between 5 and 10 percent, reinsurance by the Department of Education drops to 90 percent; and for loss rates exceeding 10 percent, reinsurance declines to 80 percent.

This reduction in guarantee amount creates a situation in which a State or nonprofit student loan guarantee agency that has high loss rates could diminish its reserves. Sallie Mae management recognizes the importance of this credit risk exposure. While its primary method of monitoring this risk is through the reports required to be submitted to the Department of Education by the guarantee agencies, Sallie Mae also reviews supplemental information obtained directly from the guarantee agencies. Sallie Mae analysts also conduct periodic on-site visits.

Exposure on warehousing advances

Warehousing advances outstanding totaled $8.6 billion on December 31, 1989, while warehousing advance commitments totaled another $1.7 billion. Warehousing advances are made to lenders as a source to finance their holdings of student loans and in anticipation of future student loan business.

Warehousing advances usually are drawn down in installments as needed by the lender. A warehousing advance can take the form of a revolving forward financing agreement under which the borrower may draw down and repay the advance without limitation as long as the total amount borrowed at any one time does not exceed the amount of the credit line. These commitments are irrevocable on the part of Sallie Mae, subject to compliance by the borrower with the provisions of the agreement.

Since warehousing advances are not guaranteed by the Federal Government or State or nonprofit agencies, it is critical that Sallie Mae make accurate assessments of, and obtain pledges of adequate collateral against, credit risk. All warehousing advances are secured, with collateral consisting mostly of federally guaranteed student loans and securities of the Treasury and other GSEs. In a limited number of instances, small portions of warehousing advances have been secured by mortgage-backed securities or whole mortgage loans. Collateralization greatly reduces Sallie Mae's credit risk exposure on this form of lending.

In cases where Sallie Mae has determined that a borrower under its warehousing advance program may experience financial difficulties, or that collateral such as a whole mortgage loan is not highly liquid, Sallie Mae requires more collateral. Sallie Mae may encourage a borrower that is having financial difficulty to prepay warehousing advances by selling the collateral to Sallie Mae. Sallie Mae reports that this suggestion has been followed in several cases.

Exposure to students

If student loans are not documented and serviced according to the regulations or standards of the entity providing the guarantee, in the event of a default, Sallie Mae could not pursue a claim against the entity providing the guarantee[9] to recover its losses, unless the documentation or servicing defect is cured pursuant to applicable regulations.

Sallie Mae services 49 percent of the student loans it purchases, while the other 51 percent are serviced by third-party contractors under Sallie Mae supervision. The contracted portfolio of student loans is supervised and audited by Sallie Mae, and the servicer indemnifies Sallie Mae against any loss that Sallie Mae might suffer as a result of faulty servicing.

Sallie Mae has constantly improved its ability to service student loans (see Management and Operations Risk section below) in accordance with Federal, State and nonprofit student loan guarantor standards. The Federal guarantee covers loss of principal and interest, and in the case of GSLP, covers loss of the special allowance. The time consuming nature of the steps required to process defaulted student loans can result in loss of interest earnings on the delayed payments of principal and interest. The initial claim for payment cannot be made until a payment on an account is overdue for 180 days.

Sallie Mae's underwriting guidelines and purchase criteria are designed to identify and isolate problem loans, such as loans that have not been documented completely or for which servicing has not been in accord with guarantee requirements. Also, Sallie Mae's risk of loss from improper servicing of insured student loans is mitigated through recourse against the following additional sources of payment:

(1) the selling institution, in the case of improper origination or servicing; and

(2) the contract servicer, whose credit is reviewed by Sallie Mae prior to loan purchase.

Other credit risk

Other credit risk exposure of Sallie Mae results from its holdings of privately insured student loans, loans for academic facilities and student loan revenue bonds, as well as letters of credit issued to support student loan revenue bonds.

On December 31, 1989, Sallie Mae's holdings of $160.5 million of privately insured education loans under specialized programs for students were insured by four institutions, including two insurance companies, one bank holding company affiliate and one university. Sallie Mae pays the first 3 percent of losses under the largest of these programs, with the next 20 percent of losses borne by a private insurer. Insurance covers 20 percent of the loss under another program and 100 percent of the loss under a third program. Under the fourth program, the first $10 million of loss (from $65 million in total loans) is borne by a bank holding company. Privately-insured student loans comprise only a small proportion of Sallie Mae's portfolio and are not expected to have a significant impact on Sallie Mae's risk exposure. Sallie Mae conducts continuing credit evaluations of the insurers and believes the risks to Sallie Mae are minimal.

Sallie Mae held $713 million of student loan revenue and facilities bonds on December 31, 1989. Sallie Mae subjects such bonds to thorough credit review to ensure that revenues will service and retire debt. In the case of facilities loans, Sallie Mae analyzes contractual covenants to ensure that funds will be available to repay the debt and in some cases obtains perfected liens on underlying facilities or requires other forms of collateral. Due to the specialized nature of the buildings (e.g., dormitories, hospitals), however, Sallie Mae's ability to recover its investment may be limited in the event of default.

Conclusions and recommendations

Sallie Mae's subjective judgments about the financial condition of counterparties have protected Sallie Mae from credit risk of swaps, loans to State and nonprofit student loan agencies, and warehousing advances. The losses it has experienced to date have been small. Sallie Mae's extensive efforts in the area of servicing student loans, discussed in the Management and Operations Risk section of this report, have also been effective in preventing losses.

Nevertheless, the Treasury is concerned with the general absence of collateral to cover Sallie Mae's risk exposure in swaps transactions and with the infrequency of Sallie Mae's reviews of current conditions in the money and foreign currency markets. More frequent reviews and collateralization requirements would better protect Sallie Mae from exposure to credit risk.

The subjective Sallie Mae credit risk assessment practices should be formalized to improve Sallie Mae's ability to track the credit quality of the firm's counterparties and alert Sallie if any deterioration in their credit quality occurs. This need is recognized by management and is included in its internal business plan. This subject should receive special attention in Treasury's second study of Government-sponsored enterprises, which is required by FIRREA to be submitted to Congress on May 15, 1991.

Interest Rate Risk

Interest rate risk occurs when the values of a firm's assets and liabilities react differently to changes in interest rates. Sallie Mae's stated objective in financing its asset portfolio is "to minimize its sensitivity to changes in interest rates, which could cause fluctuations in net interest margin, by matching the interest rate characteristics of borrowing to related assets and the maturities of fixed rate assets and liabilities."[10]

Sallie Mae has issued floating rate debt and is engaged extensively in interest rate swaps to match the interest reset periods on its largely floating rate loan portfolio. Sallie Mae's period gap analysis indicates that Sallie Mae has closely matched the major proportion of its assets and liabilities. Sallie Mae does not use duration gap analysis to assess the interest rate sensitivity of its balance sheet. The Treasury has reviewed the interest rate sensitivity analysis that Sallie Mae uses and concluded that the use of period gap analysis is appropriate, given the short-term nature of Sallie Mae's assets and liabilities. Practically all of the decline in Sallie Mae's net interest margin in the last five years is attributable to an increase in leverage.

Comparison of assets and liabilities

Sallie Mae's assets on December 31, 1989, were largely in guaranteed student loans, with floating interest rates determined under Federal statutes, floating rate warehousing advances, and short-term investments (primarily in federal funds). Given the largely floating rate and short-term nature of Sallie Mae's assets, Sallie Mae's ability to manage its liabilities is crucial to its ability to control interest rate risk.

Student loans accounted for 45 percent of Sallie Mae's assets on December 31, 1989, while warehousing advances accounted for 24 percent, cash and short-term investments accounted for 28 percent and other assets 3 percent. Most of the student loans in Sallie Mae's portfolio are, by statute, indexed to the average investment yield in weekly Treasury auctions of 91-day Treasury bills. Rates earned on warehousing advances were indexed to 91-day Treasury bills (33 percent), indexed to LIBOR (47 percent) and fixed rate (20 percent). Sallie Mae's debt is 45 percent short-term, 23 percent long-term at floating rates and 32 percent long-term at fixed rates. These numbers suggest that, without hedging techniques, Sallie Mae may be vulnerable to interest rate risk, because of the mismatches between assets and liabilities.

Use of swaps

Sallie Mae engages in interest rate swaps to hedge this potential interest rate risk exposure. As of December 31, 1989, $9.0 billion of long-term fixed rate debt was matched with interest rate exchange agreements. Sallie Mae also has $1.6 billion of long-term, fixed rate debt that is not matched with interest rate swaps. It is hedged with investments in Treasury securities and other fixed rate Sallie Mae investments. Assuming Sallie Mae's swap counterparties perform on their obligations, Sallie Mae's swap strategy protects it against interest rate risk.

Period gap analysis

Sallie Mae uses period gap analysis to evaluate interest rate risk. Period gap analysis involves measuring the dollar value of interest rate sensitive assets and the dollar value of interest rate sensitive liabilities, plus stockholder equity, for several time periods. When the gap between a firm's assets and liabilities in each period equals zero, period gap analysis would indicate that assets and liabilities are perfectly hedged.

With traditional assets, period gap analysis may fail to reveal intra-period repricing risk, for example, if an asset were priced on the first day of the period and the liability priced on the last. This intra-period repricing risk is not significant in the case of Sallie Mae's interest rate risk analysis, however, because most of Sallie Mae's assets and liabilities are indexed to weekly auctions of 91-day Treasury bills.

Period gap analysis shows that Sallie Mae's exposure to interest rate risk is very small. Sallie Mae's period gap was .25 percent (.0025) of assets with maturities or interest reset dates within three months on December 31, 1989. Thus, assets in this class, which accounted for about 85 percent of Sallie Mae's total assets on that date, were nearly perfectly matched against liabilities in this class (see Table 4). The period gap for assets with maturities or interest reset dates within 6 months, which accounted for 90 percent of Sallie Mae's total assets on December 31, 1989, was only .37 percent. For the 2- to 5-year period and for the over 5-year period, there existed substantial mismatches of assets and liabilities, plus stockholder equity. In part the mismatches in the longer-term maturity area reflect Sallie Mae's accounting convention, which scores shareholder equity as the source of funds for Sallie Mae investments in tax exempt student loan revenue bonds. The proportion of Sallie Mae assets with maturities of this length was about 7 percent of total assets on December 31, 1989.

Table 4
Sallie Mae
Swap Adjusted Period Gap Analysis
As of December 31, 1989

($ millions)

	Assets	Liabilities and Stockholder Equity	Period Gap	Gap as a Percent of Assets
3 months or less	30,120	30,046	74	0.25%
3 months to 6 months	1,764	1,719	45	2.55
6 months to 1 year	640	649	(9)	1.41
1 year to 2 years	581	718	(137)	23.58
2 years to 5 years	1,088	439	649	59.65
Over 5 years	1,295	1,917	(622)	48.03
Total	35,488	35,488	0	

Source: Sallie Mae Information Statement, January 31, 1990.

Sallie Mae published period gap analysis in its independently-audited annual financial reports from 1985 through 1989. In each of those years, the 6-month maturity or interest reset class accounted for 85 to 90 percent of Sallie Mae's assets and period gaps ranged from .37 percent in 1989 to 2.17 percent in 1987. The small size of the period gaps and the high proportion of assets to which they apply reinforce the conclusion that Sallie Mae's exposure to interest rate risk is small. The Treasury has not independently verified the accuracy of Sallie Mae's period gap analyses.

Duration gap analysis

Sallie Mae does not use duration gap analysis in the usual course of analyzing its interest rate risk. Duration gap analysis is considered to be a superior measure of interest rate risk.[11] For short-term financial assets, duration, which is a weighted average of the present value of future cash flows, closely approximates the term to maturity. Since the maturity and duration of short-term assets are so similar, duration analysis would provide information that is comparable with the period gap analysis used by Sallie Mae.

Net interest margin

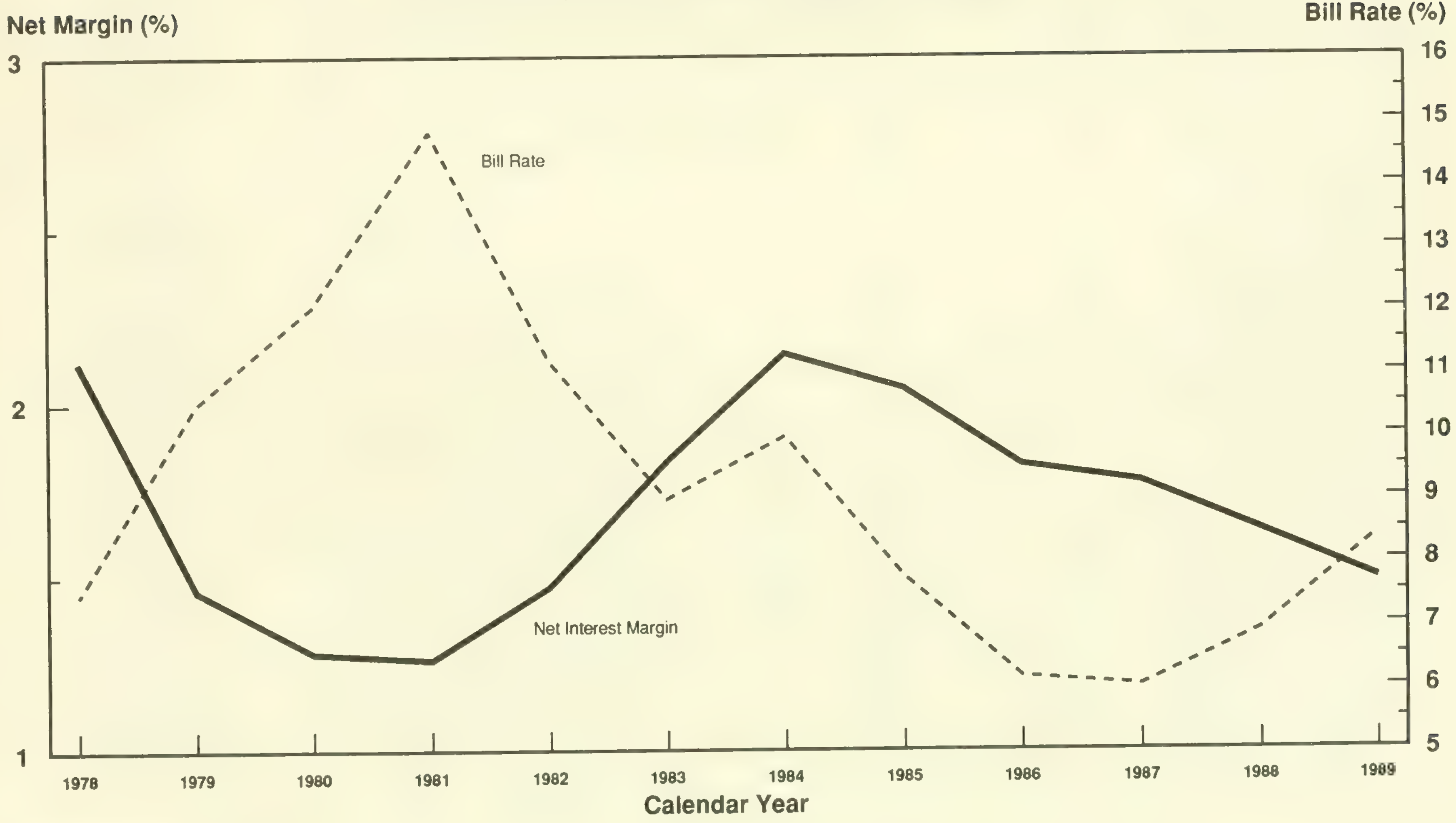
To assess whether Sallie Mae's use of swaps and other strategies to minimize interest rate risk has been successful, it is necessary to examine the pattern and stability of interest margin. Net interest margin is the average taxable net interest earned divided by average assets. If assets and liabilities are perfectly matched, Sallie Mae's interest margin should show considerably less volatility than interest rates.

Sallie Mae's net interest margin tended to decline when Treasury bill rates increased and to increase when interest rates on Treasury bills declined in calendar years 1978 through 1989 (see Chart 1). Perhaps more important than the relationship between interest rates on Treasury bills and net interest margin is that net interest margin declined in each of the five years since it peaked at 2.14 percent in 1984.

This decline in net interest margin is largely attributable to changes in Sallie Mae's leverage and its asset mix. Increases in Sallie Mae's debt-to-equity ratio since 1984 have meant that Sallie Mae's interest expense has grown faster than its asset base. Sallie Mae's equity, compared with debt and total assets, peaked in 1984. The decline is also attributable to the higher costs of student loans purchased, increased cost of borrowing Treasury bill-indexed money and a gradual decline in higher-yielding student loans relative to other interest-bearing assets, including investments.

Chart 1

Sallie Mae Net Interest Margin
Versus
91-Day Treasury Bill Rates



Source: Sallie Mae and U.S. Treasury

Conclusions and recommendations

Sallie Mae has issued floating rate debt and has engaged extensively in interest rate swaps to manage interest rate risk. Period gap analysis indicates that most of Sallie Mae's assets and liabilities are accurately matched.

Sallie Mae's net interest margin has been declining over the last five years, largely as a result of increases in Sallie Mae's debt to equity ratio. This has not had a material or adverse impact on Sallie Mae.

Management and Operations Risk

Treasury's review of Sallie Mae's controls and systems in place to monitor management and operations risk relied primarily upon interviews with Sallie Mae officers. While Treasury did not perform verification procedures, Treasury's review indicates that the controls, monitoring and information systems used by Sallie Mae are adequate to provide for:

(1) a defined organizational structure with committees of the Board of Directors that serve as a forum for policy-making and communication;

(2) a detailed annual budget and planning process that operates within the context of a general strategic plan;

(3) control systems that are reviewed by an independent Internal Audit Division and supplemented by external audit services;

(4) management information systems that are used effectively to maintain accurate records of the performance of the assets on Sallie Mae's books and to produce reports relating to chief operating risks; and

(5) maintenance of an established personnel administration system.

Organizational structure

The Sallie Mae Board of Directors conducts regular bimonthly meetings. The Board maintains seven standing committees, composed of its members, to receive and review the recommendations of management: Audit; Compensation and Personnel; Executive; External Concerns; Finance; Nominations; and Board Affairs. Because the Board is large and meets only six times per year, it places much responsibility on its standing committees. The committees meet on a regularly-scheduled basis to review corporate activities and advise management on corporate policies, procedures and direction in their respective areas. The Board, with the assistance of its Audit Committee and an Internal Auditing Department, reporting directly to the Board, has oversight responsibilities of Sallie Mae's accounting and reporting policies.

Planning

Sallie Mae operates an organized and ongoing planning and budgeting process that considers the current status of operations, the implication of economic and other trends on business volume, and the likely effects of current decisions on operations. Planning occurs at two levels: a 5-year strategic plan and an annual budget and business plan. Plans at both levels are developed by staff and management, with active participation by the President and Board reviews.

The 5-year strategic plan articulates the corporate mission and discusses its 5-year outlook and goals with regard to marketing and operations, financial management, and administration. The annual budget plan explicitly addresses the business and marketing objectives. Information concerning the balance sheet and revenue and expense projections by operating division is consolidated and reviewed under the direction of the Controller. The process includes a review of the monthly budget variance report that compares actual performance with the detailed plan. All financial statements are compared with plan; variances are reviewed regularly with the responsible division head and senior management. A budget variance report is presented to the Board bimonthly. Sallie Mae stated that these reports serve as the tool to inform management and the Board of the progress made toward division objectives and to alert them promptly to deviations from budgeted revenue or expenditure.

Control systems

Sallie Mae has systems, policies and procedures to monitor delegated activities, and the reporting processes to inform management of the soundness of the organization's activities. The first level of responsibility for the design, integrity and exercise of adequate controls rests with division and unit heads, and their respective officers. The Internal Audit Division, which reports directly to the Audit Committee of the Board, is responsible for uncovering control deficiencies and verifying the proper design and exercise of control systems. Sallie Mae also employs an independent public accounting firm to perform an external audit and evaluate the work of internal auditors. The most recent audit disclosed no material weaknesses.

Treasury's review revealed that written procedures do not exist in the credit analysis area. Sallie Mae is aware of its exposure in this area and has decided to centralize responsibility for credit risk controls under a recently-hired Senior Vice President. Details are discussed in the Credit Risk section of this study.

Management information systems

Sallie Mae is, by strategy, heavily dependent upon management information systems (MIS) to meet the due diligence requirements that affect its ability to make claims under Federal and State student loan guarantees. Our overall observations are that systems and controls exist which ensure that the Directors and management receive the necessary and accurate information to define goals, guide operations, and make timely decisions.

Sallie Mae's greatest dependence on MIS lies in the area of loan servicing; Sallie Mae services about $8 billion of loans, principally through its regional servicing centers. The principal MIS that Sallie Mae uses to accomplish this task is the Consolidated Loan Accounting Software System (CLASS), an integrated system that can service a borrower's account across loan types and different guarantors. In addition, Sallie Mae's MIS includes other information systems, related to Sallie Mae's loan servicing function, such as systems to monitor contract loan servicers, as well as systems related to the accounting needs typical of a large financial institution.

Sallie Mae views new system development aggressively. Officials believe that changes to the student loan program occur with enough regularity that a servicing system has an effective life of seven or eight years. Rather than attempting to alter existing software to capture changes in statutory or regulatory guaranteed student loan program servicing requirements and accounting improvements, Sallie Mae management has decided periodically to develop an entirely new system. This approach tends to maximize Sallie Mae's ability to introduce technological advances in systems hardware and improvements in programming techniques in its MIS, to take the most recent standards of the auditing community into consideration in its MIS and to streamline its data processing operations.

The daily work of Sallie Mae is heavily operational and reports are designed to reflect the status of operations. The design and need for such reports are subject to ongoing scrutiny by management. Responsibility for auditing the accuracy of information reported on MIS lies with Internal Audit. Because Sallie Mae is so dependent on MIS, management is very sensitive to controls on how changes are made to those systems. Segregation of duties, physical security of wire payment transfer equipment, use of lockbox systems at loan servicing centers, and bonding of employees are examples (separate from other controls used by MIS) of how Sallie Mae protects itself against unauthorized changes to Sallie Mae financial documentation.

Personnel administration

Sallie Mae recruits actively to replace regular turnover and build staff levels to accommodate growth. Management succession plans are not formalized. Sallie Mae senior level management believes, however, that adequate depth exists at the necessary levels to ensure that operations would continue in an orderly manner should the need arise. The Board reviews and determines officers' salaries and bonuses annually.

A variety of programs and publications exist to promote internal communication of Sallie Mae news and policies. Both formal and informal communication lines and systems exist to communicate information throughout the organization.

Conclusions and recommendations

Sallie Mae has adequate controls to manage and monitor its operations and to communicate policy decisions of senior level management throughout the organization.

Treasury's review indicates that Sallie Mae maintains the necessary systems to promote the development and continuity of a quality staff and performs reviews to ensure adherence to administrative policies and procedures.

Written credit standards should be developed and adhered to for those with whom Sallie Mae conducts swaps and other types of transactions.

Analysis of Capital

Sallie Mae has been increasing its capital over the last decade, largely from retained earnings and additional paid-in capital (see Table 5). In each year since 1986, Sallie Mae has been using a portion of its retained earnings to repurchase voting and nonvoting common stock and preferred stock. As Sallie Mae assets grew rapidly in the 1980s, management's decisions to repurchase stock restricted growth of stockholder equity. As a result, Sallie Mae's stockholder equity to assets ratio has declined on balance since it peaked after Sallie Mae issued preferred stock in 1983 (see Chart 2).

Preferred stock, voting and nonvoting common stock, additional paid-in capital, and retained earnings, less treasury stock, are included in Sallie Mae's definition of stockholder equity.

Preferred stock

On March 1, 1983, Sallie Mae issued adjustable rate cumulative preferred stock, the proceeds of which raised shareholder equity by $250 million to an all-time high of 5.51 percent of assets in that year. The stock is redeemable at Sallie Mae's option, in whole or in part, at $50 per share, plus accrued dividends. It should be noted that the risk-based capital standard for banks excludes cumulative preferred from Tier 1, or equity capital, but includes it in total capital.

Repurchase of preferred stock. In May 1986, the Board of Directors authorized Sallie Mae's to purchase up to $50 million of Sallie Mae's adjustable rate cumulative preferred stock at market prices. As of December 31, 1989, Sallie Mae had spent $32 million to repurchase .7 million shares at an average price of $45.46 per share, totalling $32 million, reducing shareholder equity by the same amount.

Common stock

Sallie Mae voting common stock may be owned only by certain holders specified in the Higher Education Act. In 1983, the Board of Directors approved the issuance of a nonvoting class of common stock equal in all other respects to the voting common stock and transferable without restriction. In connection with a September 1983 public offering, holders of voting common shares were granted the right to convert periodically a portion of their holdings to nonvoting common stock. Conversions account for the changes in voting and nonvoting common stock shown in Table 5.

The final conversion under that plan occurred in March 1989. On December 31, 1989, there were 12.9 million voting and 85.7 million nonvoting common shares outstanding, net of treasury stock.

Warrants and puts. In 1986, Sallie Mae issued $300 million of 5.6 percent notes due August 1, 1991 with 9.0 million and 4.5 million nonvoting common stock warrants and puts, respectively. Proceeds totalling $24.9 million were recorded as additional paid-in capital. Each warrant entitles the holder to purchase one share of Sallie Mae nonvoting common stock at a price of $40.00 until August 1, 1991. Each put entitles the holder to tender to Sallie Mae one share of nonvoting common stock for mandatory purchase by Sallie Mae at a price of $20.40 per share until August 1, 1991. As of December 31, 1989, none of the warrants or puts had been exercised.

In April 1990, the warrants were in the money. If they were all exercised in 1991, the proceeds of the warrants would add $360 million to Sallie Mae capital. At this point, it is uncertain whether the warrants will remain in the money and be exercised. If they are, however, Sallie Mae would be likely to use the proceeds to repurchase additional Sallie Mae stock, thereby maintaining a high return on equity.

Repurchases of common stock. In September 1986, Sallie Mae's Board of Directors authorized management to repurchase common stock at market prices. As of December 31, 1989, Sallie Mae held $537 million of treasury stock. The Board has authorized Sallie Mae to repurchase up to an additional 3.5 million shares[12] on or after February 1, 1990.

Regulatory capital

One way to measure Sallie Mae capital for the purpose of comparing Sallie Mae with other GSEs and financial institutions is the risk-based capital standard established by the Federal banking regulators. Use of this standard is for comparative purposes and does not imply that the Treasury considers it appropriate for Sallie Mae.

The definition of Tier 1 regulatory capital for the purposes of the standard is the same as Sallie Mae's definition of stockholder equity, except that regulatory capital excludes Sallie Mae's preferred stock. Tier 2 capital for purposes of the standard includes the preferred stock and convertible subordinated debentures, as well as loan loss reserves. Total capital is the sum of Tier 1 and Tier 2 capital.

Convertible subordinated debentures. As is clear from the definitions above, Sallie Mae does not include convertible subordinated debentures in its calculation of capital. Sallie

Mae issued such debentures in November 1984 to mature on November 15, 2009. On November 22, 1989, Sallie Mae redeemed all outstanding convertible debentures. Prior to the redemption date, holders had converted debentures into nonvoting common stock, adding about $200 million to stockholder equity.

Loss reserves. Sallie Mae does not include loss reserves in its computation of stockholder equity. Such reserves totaled $12 million for the purpose of Tier 2 regulatory capital on December 31, 1989.

Sallie Mae capital measured under banking standard. Using the bank risk-based capital standard, Sallie Mae's capital exceeds the minimum required. Sallie Mae's total capital was nearly 11 percent of risk-adjusted assets and off-balance-sheet items on December 31, 1989, while the minimum requirement for banks will be 8 percent by 1992. Moreover, nearly 80 percent of Sallie Mae's capital is Tier 1 capital, which need only account for half of a bank's required capital under the standard (see Tables 6, 7, 8, and 9).

Overall capital ratios and trends

Sallie Mae's assets increased from $9.1 billion at year-end 1983 to $35.5 billion at year-end 1989, an increase of 289 percent. For the same period, Sallie Mae's shareholder equity increased by 107 percent from $503 million to $1,038 million. The differences in these respective rates of growth have resulted in Sallie Mae's ratio of equity to assets declining from 1983 to 1989 as shown in Chart 2. It should be noted, however, that this ratio increased dramatically from 1980 to 1983 as a result of additional equity being raised by the sale of preferred stock. This decline in Sallie Mae's equity to asset ratio is the result of management's stated desire to manage this ratio in order to maximize shareholder value and return on equity.

The fastest growing component of Sallie Mae's equity has been retained earnings, which grew from $127 million in 1983 to $976 million in 1989, an increase of 668 percent. This dramatic increase in retained earnings has not resulted in an equally dramatic increase in Sallie Mae's equity to asset ratio, because of the stock repurchase program Sallie Mae embarked on in 1986. Treasury stock increased from $161 million in 1986 to $537 million in 1989 as a result of the stock repurchase program. If the purchase amount of the Treasury stock were added to Sallie Mae's equity, the equity to asset ratio would be 4.4 at year-end 1989 instead of 2.92. Also, this higher level of equity would have decreased Sallie Mae's return on average equity well below the levels reported in Sallie Mae's annual report.

Conclusions and recommendations

It is the intent of Sallie Mae's management to maximize return on equity and shareholder value. The decline in the equity to asset ratio from 1983 to 1989, primarily as a result of the stock repurchase program, clearly demonstrates this. However, Sallie Mae currently appears to be adequately capitalized and a continuation of the strong earnings growth that Sallie Mae has enjoyed recently will allow for continued increases in shareholder equity.

Table 5
Sallie Mae Shareholder Equity

(year-end, $ millions)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Preferred Stock	—	—	—	250	250	250	244	225	219	215
Voting Common Stock	17	17	17	15	13	10	7	6	6	4
Nonvoting Common Stock	—	—	—	6	8	11	13	15	15	19
Additional Paid-in Capital	7	7	7	105	105	105	130	133	142	360
Retained Earnings	27	44	79	127	201	300	421	575	767	976
Less Treasury Stock	—	—	—	—	—	—	161	270	350	537
Shareholder Equity	51	68	103	503	577	676	655	684	801	1,038

Source: Sallie Mae Annual Reports for 1980 through 1989

Table 6
Sallie Mae Capital Components

($ millions, year-end)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Tier One Capital (T1C)										
Voting common stock	17	17	17	15	13	10	7	6	6	4
Nonvoting common stock	0	0	0	6	8	10	13	15	15	19
Additional paid-in capital	7	7	7	105	105	105	130	133	143	360
Retained earnings	27	44	79	127	201	300	421	575	767	976
Less common stock in treasury	0	0	0	0	0	0	(161)	(270)	(350)	(537)
Total Tier One Capital	51	68	103	253	327	425	410	459	581	822
Tier Two Capital (T2C)										
Preferred stock ($50 par value)	0	0	0	250	250	250	244	225	219	215
Convertible subordinated debentures	0	0	0	0	200	200	200	200	200	0
Loan loss reserves	0	1	3	4	4	3	4	4	9	12
Total Tier Two Capital	0	1	3	254	454	453	448	429	428	227
Total Capital (TC)	51	69	106	507	781	879	859	889	1,009	1,049
Balance Sheet Assets										
Student loans, net*	1,217	2,072	3,222	4,585	5,577	6,802	8,179	10,047	13,211	16,041
Warehousing advances	1,422	2,755	3,191	3,285	4,230	5,481	6,527	8,357	7,989	8,601
Cash and investments	40	168	853	943	1,395	1,731	3,122	3,836	6,567	9,839
Other assets	103	176	241	310	422	439	408	628	870	1,019
Total Assets	2,782	5,171	7,507	9,123	11,624	14,453	18,236	22,868	28,637	35,500

*Student loans are adjusted by adding back in loss reserves.

Source: Sallie Mae.

Table 7
Sallie Mae Capital Ratios

(percentages)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Equity capital to assets	1.83	1.32	1.37	2.77	2.81	2.94	2.25	2.01	2.03	2.32
Total capital to assets	1.83	1.33	1.41	5.56	6.72	6.08	4.71	3.89	3.52	2.95
Tier 2 capital to total capital	0.00	1.45	2.83	50.10	58.13	51.54	52.15	48.26	42.42	21.64

Source: Treasury calculations based on data supplied by Sallie Mae.

Table 8
Sallie Mae Growth Rates

(percentages)

	1981	1982	1983	1984	1985	1986	1987	1988	1989
Retained Earnings	63	80	61	58	49	40	37	33	27
Tier One Capital (T1C)	33	51	146	29	30	-4	12	27	41
Tier Two Capital (T2C)	-	-	-	79	-0	-1	-4	-0	-47
Total Capital (TC)	35	54	378	54	13	-2	3	13	4
Total Assets	86	45	22	27	24	26	25	25	24

Source: Treasury calculations based on data supplied by Sallie Mae.

Table 9
Sallie Mae Risk–Weighted Balance Sheet

As of December 31, 1989
($ millions)

	Amount	Risk Weighting Factor	Adjusted Amount
Assets			
Student loans, net*	16,041	20%	3,208
Warehousing advances	8,601	22.12% **	1,903
Cash and investments:			
Cash	17	0%	0
Federal Funds	7,300	20%	1,460
U.S. Treasury securities	922	0%	0
Student loan revenue & facilities bonds	713	50%	357
Money market preferred stock	389	100%	389
Other investments:			
Resale agreements	189	20%	38
Leveraged leases	150	20%	30
Taxable municipal bonds	39	50%	20
Agency securities	35	0%	0
Certificates of deposit	12	20%	2
Miscellaneous	73	20%	15
Other assets:			
Accrued Int. Rec. -- Loans & Advances	592	20%	118
Accrued Int. Rec. -- Investments	119	23.52% **	28
Accrued Int. Rec. -- Swaps	164	33.91% **	56
Other	144	100%	144
Total Assets	35,500		7,767
Off–Balance–Sheet Items (OBS)***			
Interest rate swaps	583	33.91% **	198
Foreign currency swaps & Forward exch. agree.	713	27.64% **	197
Student loan purchase commitments (50%)	4,496	20%	899
Warehousing advance commitments (50%)	866	22.12% **	191
Letters of credit (100%)	1,526	20%	305
Total OBS	8,183		1,790
Total Assets & OBS	43,683		9,557

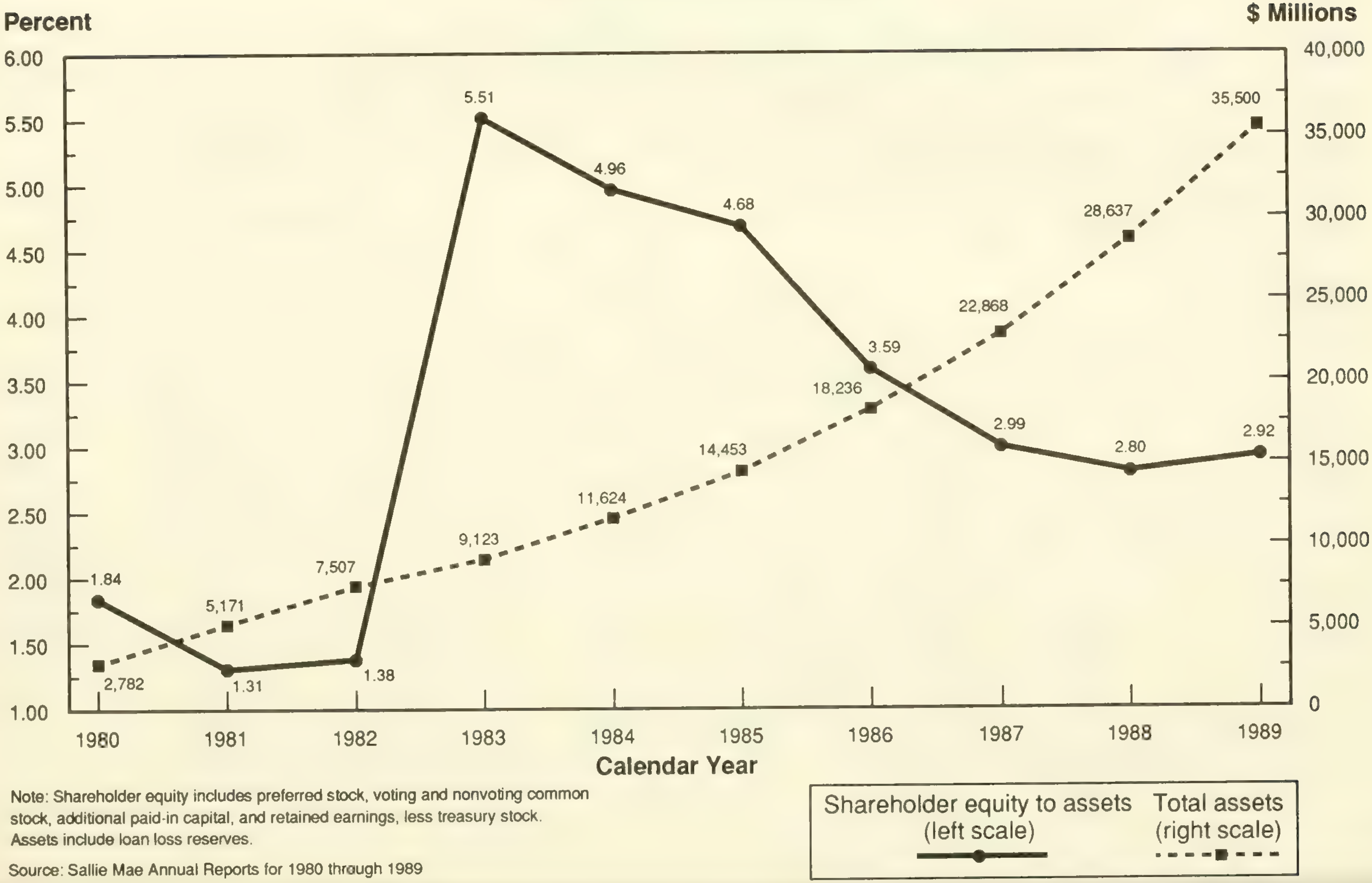
*Student loans are adjusted by adding back in loss reserves.
**Weighted average risk–weighting factor.
***Amounts are credit equivalent amounts calculated using commercial bank rules promulgated by the Federal Reserve.

Source: Treasury calculations based on data supplied by Sallie Mae.

Risk–Based Capital Ratio	
Tier 1 Capital	822
Tier 2 Capital	227
Total Capital (TC)	1,049
TC as % of Total Assets	13.51%
TC as % of (Total Assets + OBS)	10.98%

Chart 2

Salle Mae Shareholder Equity vs. Growth of Assets



Note: Shareholder equity includes preferred stock, voting and nonvoting common stock, additional paid-in capital, and retained earnings, less treasury stock. Assets include loan loss reserves.

Source: Sallie Mae Annual Reports for 1980 through 1989

Quality and Timeliness of Information

Sallie Mae's information reporting stresses financial data and information on the evolution of Sallie Mae's role in secondary education-related financing. It does not, however, discuss the risks that Sallie Mae potentially faces in the course of its business operations. We believe Sallie Mae should provide more qualitative analysis to the public regarding such risks and policies, such as policies regarding collateralization of swaps, to protect the firm from such risks.

Sallie Mae publishes the same information in a timely manner that stockholder-owned U.S. corporations usually make available to investors, including audited annual reports and quarterly information statements. The information statements contain complete, audited financial information for the most recent year-end and unaudited financial information for subsequent quarters. The annual reports and information statements contain discussion and analysis of Sallie Mae's operating results and financial condition and descriptions of Sallie Mae's business operations. These reports are filed with the New York Stock Exchange, which lists Sallie Mae's nonvoting common stock, and with the National Association of Securities Dealers, NASDAQ, which lists Sallie Mae's voting common stock.

Information provided to U.S. Government agencies includes the following Sallie Mae reports to:

(1) the President of the United States and Congress each year on its business operations;

(2) the Secretary of the Treasury each year on significant developments and the status of Sallie Mae's business operations, including audited financial statements, and information provided to the Treasury on an ad hoc basis in connection with approvals of Sallie Mae debt offerings;

(3) the Secretary of Education each quarter regarding Department of Education guaranteed loan programs, including average loan balances, default statistics and adjustments, and each year regarding Department of Education loan defaults, acquisitions and ending balances; and

(4) the Secretary of Health and Human Services regarding HEAL loan activities of Sallie Mae.

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to examine the financial safety and soundness of Sallie Mae. Treasury's examination focused on the risks associated with Sallie Mae's operations that might expose the Federal Government to unexpected outlays in the unlikely event of Sallie Mae's insolvency. Specifically, Treasury assessed business risk, credit risk, interest rate risk, management and operations risk, and capital. Treasury also examined the quality and timeliness of the information that Sallie Mae makes available to the Government and the public.

Sallie Mae provides a secondary market for guaranteed student loans and makes warehousing advances to financial institutions and others that are engaged in education lending. Its business expanded rapidly in the 1980s. Sallie Mae's assets increased from $9.1 billion at year-end 1983 to $35.5 billion at year-end 1989, an increase of 289 percent.

Sallie Mae is not exposed to a large degree of business risk. The major concern is that Sallie Mae's charter limits its focus to student loan and related markets. If not offset by other factors, such as an increase in the proportion of students that need student loan credit, shrinkage in the student population expected by the Census Bureau in the next five years could affect Sallie Mae's ability to expand its asset base and therefore its profits.

Sallie Mae is essentially not exposed to credit risk on its fully federally guaranteed or reinsured student loan portfolio. Sallie Mae's major source of credit risk exposure is that entailed in its activities to hedge interest rate and foreign currency risks. In this connection, although Sallie Mae has not suffered significant losses as a result of the unsecured nature of its swap transactions, we believe Sallie Mae should require collateral in swap transactions sufficient to cover its credit risk exposure.

Sallie Mae's subjective judgments about the financial condition of counterparties have protected Sallie Mae from credit risks. Sallie Mae is developing formal credit risk assessment standards that will improve its ability to assess the credit quality of its counterparties.

Most of Sallie Mae's assets and liabilities have a short interest rate reset. Most assets and liabilities are closely matched. As a result, Sallie Mae is not exposed to a great degree of interest rates risk. Sallie Mae's net interest margin has been declining for the last five years. This is due more to an increase in leverage than to changes in interest rates and has not had a material adverse impact on Sallie Mae's earnings.

Sallie Mae is a well managed enterprise with adequate controls to manage and monitor its operations. Nevertheless, explicit credit standards should be developed for counterparties to swap and other transactions.

Sallie Mae's management intends to maximize return on equity and shareholder values. To that end, it has been repurchasing its common stock from its strong retained earnings. In 1989, Sallie Mae's retained earnings increased by $209 million, of which $187 million was used to purchase Sallie Mae stock. Sallie Mae's return on stockholders' equity was 31.72 percent in 1989.

Sallie Mae has a strong capital base, added to annually by its increasing retained earnings. Sallie Mae does not need to increase its capital at this time. However, Sallie Mae's capital adequacy should remain under scrutiny by the Congress and the Executive Branch, as it has no Federal regulator.

In order to inform investors more thoroughly of the risks involved in Sallie Mae's business operations, Sallie Mae should publish more information regarding its swap activity and policies for assuring the creditworthiness of its counterparties in all types of business transactions. Sallie Mae's information reporting is timely.

Sallie Mae's subjective judgments about the financial condition of counterparties in interest rate and currency swaps, loans to State and nonprofit student loan agencies, and warehousing advances have protected Sallie Mae from the credit risks involved in those transactions.

SOURCES OF INFORMATION

1. Sallie Mae annual reports and quarterly information statements, letters from and meetings and telephone conversations with senior level Sallie Mae officials.

2. Higher Education Act of 1965 (20 U.S.C. 1087-2) and Department of Education regulations pertaining to the Guaranteed Student Loan program (34 C.F.R., Part 682) .

3. Public Health Service Act (42 U.S.C. 294a) and Department of Health and Human Services regulations pertaining to the Health Education Assistance Loan program (42 C.F.R., Part 60).

4. Student Loan Marketing Association, The History of Sallie Mae: 1972 - 1986.

5. Student Loan Marketing Association, 1988 Annual Report to the President and the Congress of the United States, March 1989.

6. Student Loan Marketing Association, 1989 and 1990 Factbooks for Investors and Analysts.

7. Moody's Sovereign Credit Report on Sallie Mae, October 1989.

8. Salomon Brothers, Stock Research/financial Services, Student Loan Marketing Association: A Unique Franchise: Sound Earnings Progress Spells Outperformance, January 1990.

9. Statement of Frank Rizzo, Managing Director of the Debt Rating Division of Standard and Poor's Corporation, before the Senate Committee on Banking, Housing, and Urban Affairs, October 31, 1989, pertaining to Government-sponsored enterprises.

10. J. Gregg Whittaker, "Interest Rate Swaps: Risk and Regulation," Federal Reserve Bank of Kansas City Economic Review, March 1987.

ENDNOTES

1. Sallie Mae: A Fact Sheet for Equity Investors, dated September 1989, paragraph regarding "Products and Services"

2. 1988 Report to the President and the Congress, section entitled "A Summary of Sallie Mae and the GSLP: 1972-88"

3. U.S. Department of the Treasury, Federal Financing Bank portfolio

4. Letter of February 1, 1990 to Treasury Under Secretary (Finance) Glauber from Department of Education Deputy Under Secretary (Management) Thomas E. Anfinson

5. Sallie Mae Fact Book for 1990

6. Department of Education data excerpted from the Report of the Higher Education Act Reauthorization Task Force, dated March 1990

7. The Board of Directors annually reviews certain Sallie Mae lending programs and approves program limits, collateral standards and maximum risk. Informal controls, which are in the process of being formalized, are in place to achieve goals set in the Board's annual reviews.

8. The largest portion of Sallie Mae's swap counterparty risk is with major financial institutions from whom financial information is received on a quarterly basis. A significant change in the counterparty's financial condition may prompt a more detailed review by the Credit Analysis Division.

9. Such entities include State and nonprofit agencies and the Department of Health and Human Services.

10. Sallie Mae Information Statement dated January 31, 1990

11. See, for example, "Measuring and Managing Interest Rate Risk: A Guide to Asset/Liability Models Used in Banks and Thrifts" by Alden L. Toevs and William C. Haney in Controlling Interest Rate Risk: New Techniques and Applications for Money Management by Robert B. Platt.

12. Including up to 2 million shares of voting common stock.

APPENDIX G

COLLEGE CONSTRUCTION LOAN INSURANCE ASSOCIATION

DESCRIPTION

Creation and purpose

The College Construction Loan Insurance Association ("Connie Lee") was authorized by the Higher Education Amendments of 1986 (P.L. 99-498, enacted on October 17, 1986) and incorporated on February 13, 1987 as a private, for profit corporation under the laws of the District of Columbia. Connie Lee is authorized to:

(1) guarantee, insure, and reinsure bonds, debentures, notes, evidence of debt, loans, and interests therein, the proceeds of which are to be used for education facilities purposes;

(2) guarantee and insure leases of personal, real, or mixed property to be used for education facilities purposes; and

(3) issue such letters of credit and undertake such obligations and commitments as Connie Lee considers necessary to carry out education facilities purposes.

In addition to restricting Connie Lee's guarantee and insurance activities to financing educational facilities, there are certain limitations on the aggregate dollar amount of bond and debenture issues which Connie Lee can insure, guarantee or reinsure. With respect to Connie Lee's reinsurance activities, at least the following percentages of the aggregate dollar amount of bond and debenture issues reinsured by Connie Lee must be issues which, without such insurance, are listed by a nationally recognized statistical rating organization (SRO) at a rating below the third highest rating of the organization:

(1) 10 percent for the first full year of Connie Lee's operation;

(2) 30 percent for the second full year of such operation; and

(3) 50 percent for the third full year of such operation and thereafter.

With respect to Connie Lee's direct insurance and guarantee activities, 100 percent of the obligations directly covered by primary insurance or guarantees issued by Connie Lee must be obligations of institutions which are, without insurance or guarantee, listed by a nationally recognized SRO at a rating below the third highest rating of the SRO. Moreover, at least the following percentages of the total dollar amount of obligations reinsured, insured or guaranteed by Connie Lee must be in authorized direct insurance and guarantee activities:

(1) 10 percent for the first full year of Connie Lee's operation;

(2) 30 percent for the second full year of such operation; and

(3) 50 percent for the third full year of such operation and thereafter.

In order to meet the above allocation requirements for its insurance, reinsurance, and guarantee activities, Connie Lee is required to take whatever steps may be necessary in order to publicize the availability of its insurance and reinsurance programs to eligible institutions.[1]

Congress created Connie Lee in response to a perceived growing need for new and renovated facilities and equipment among the Nation's colleges, universities, and teaching hospitals. In its November 20, 1985 report on H.R. 3700, a bill to extend and amend the Higher Education Act of 1965, the House Committee on Education and Labor stated that:

> Over the past decade postsecondary institutions have had to increase commitments of scarce institutional funds to student aid, increased energy costs, faculty salaries and student services. As a result, academic facilities, including research and instructional equipment, have been largely neglected. Necessary maintenance has been continually deferred while research and instructional equipment has become outdated and obsolete. Estimates of the facilities and equipment renewal and replacement needs for all of postsecondary education range from $30 billion to $50 billion. Approximately half of the costs associated with renovation are to repair areas of critical need where unsafe conditions may be present. In addition to the total backlog of deferred maintenance, annual on-going absolute facility maintenance needs are estimated at $5 to $6 billion. This annual need is not being met.[2]

In reviewing the then-current means of financing education facilities construction, the Committee found that internal funding, capital gift campaigns, and borrowings were the principal means of financing such construction. Yet, for a large percentage of U.S. colleges and universities, these means of financing were not effective in financing the required investment in plant and equipment. Borrowings were being used by only a small percentage of higher education institutions because bank financing options were short-term in nature and, therefore, not appropriate for facilities construction. With respect to the tax-exempt bond market, the Committee found that this market was satisfying the needs of only the top tier or "investment-grade" issuers and was falling far short of meeting the overall education facilities funding needs. Fewer than 300 issuers had been involved up to that time in the tax-exempt facilities bond market, and municipal bond insurance companies were generally rejecting institutional applicants which were not already considered "investment-grade."

The Committee believed that there were a significant number of higher education institutions which were not "investment-grade" issuers, but which were fundamentally sound nonetheless. Connie Lee was created to provide access to long-term capital primarily to this group of institutions. For this reason, the allocation limitations were placed on Connie Lee's reinsurance, insurance, and guarantee activities.[3]

By structuring Connie Lee as a Government-sponsored enterprise, Congress hoped to solve the education facilities problem in a way which involved the least liability to the Federal Government and the greatest potential for employing Federal funds to leverage a significant level of private capital investment. The proposed corporation was to be a Federal/private partnership whose goals, as stated by the House Committee on Education and Labor in its 1985 report, were to be as follows:

> Create a well capitalized financial guaranty company to be managed in a manner which will be conducive to its long term viability and will limit Federal liability in insuring academic facilities and equipment loans.
>
> Provide a combination of construction and equipment underwriting and financing expertise, credit expertise, legal analysis and financial modeling which specializes in the unique needs of institutions engaged in postsecondary education and training.
>
> Open access of long-term capital to a larger number of higher education institutions than is currently the case.
>
> Lower issuing and interest costs to the educational institutions by virtue of the financial guaranty.[4]

In recent years, private sector financial guarantee insurance, which unconditionally guarantees the payment on debt obligations of interest and principal when due, has grown as a result of increasingly complicated bond financing structures and the increasing predominance of individuals, as opposed to financial institutions, as purchasers of bonds. Financial guarantees provide issuers with net savings in interest expense, as well as market access, and provide individual investors with insurance against loss due to default.

In order to meet the demand for additional financial guarantee insurance on higher education issues, Connie Lee has developed a particular expertise in education industry financings, as well as a capitalization plan and an overall business structure designed to provide targeted service to educational institutions while keeping risk to a manageable level.[5]

Financial structure

Connie Lee is authorized to issue voting common stock, nonvoting common stock, preferred stock, preference stock, debt and other obligations.

Voting common stock. Connie Lee is authorized to issue shares of voting common stock of no par value as designated by the Board of Directors. The Secretary of Education is authorized and directed to purchase in each of the five years following the February 13, 1987 incorporation of the corporation, voting common stock of Connie Lee having an aggregate purchase price of not more than $20 million, subject to the availability of appropriations. The Student Loan Marketing Association (Sallie Mae) is authorized to purchase during the five years following the incorporation of the corporation, voting common stock having an aggregate purchase price of $25 million or more.

In addition, Connie Lee is authorized to offer for purchase voting common stock having an aggregate purchase price of $125 million to the general public during the five years following its incorporation. Not less than 40 percent of such stock must be set aside for purchase by institutions of higher education prior to being offered to the general public.

Nonvoting stock and debt issued to the public. Connie Lee is authorized to issue nonvoting common stock, preferred and preference stock, and other securities and obligations. The amounts, timing of issuance, and other terms and conditions of such stock and debt will be established by its Board of Directors.

Authority of Secretary of Education to sell common stock. The Secretary of Education may, at any time after the fifth anniversary of Connie Lee's incorporation, sell the voting common stock held by the Secretary. Sallie Mae, however, has the right of first refusal on any such sale of stock by the Secretary at a price equal to the market value of the shares as determined by the Secretary of Education, on the basis of an independent appraisal, provided that the price is not less than the value of such shares as shown on the books of account of Connie Lee as of the date of closing of such purchase. In no event can the purchase price be less than the original issue price. The Secretary is required to advise, in writing, the Senate Committee on Labor and Human Resources and the House Committee on Education and Labor of any plans to sell Connie Lee stock which the Secretary holds no later than 30 days before the proposed sale.[6]

Paid-in capital. Connie Lee is financed entirely with common stock and has no plans to issue debt as a means of raising capital.[7] The reason for this is that insurance regulators and rating agencies prefer the use of equity, as opposed to debt, so that there will not be other claims on corporate assets which could take precedence over those of insured policyholders.[8] The Secretary of Education has purchased $19.1 million of Connie Lee voting common stock with funds appropriated for this purpose in fiscal year 1988. No appropriations for this purpose were made in 1989, and there are no plans to seek appropriations in 1990 or 1991. Sallie Mae has purchased $52.9 million of voting common stock, thus increasing the total capitalization of the corporation to $72.0 million. Also, Sallie Mae has committed to provide an additional $25 million of capital if Connie Lee should require it for its reinsurance operations. This commitment expires on December 31, 1997. However, the commitment will terminate when Connie Lee begins its direct insurance activities, expected to be later this year.[9]

The provision of initial capital by the Secretary of Education and Sallie Mae, coupled with the completion of a business plan and the necessary operational systems and staffing,[10] resulted in the issuance in December 1988 of a triple A claims-paying rating by the Standard and Poor's Corporation (S&P), which the corporation needed in order to enter into the financial guarantee reinsurance business. Because Connie Lee does not plan to issue debt, it will not need to obtain a debt rating.

In order to commence its activities as a direct insurer of educational facilities obligations, Connie Lee projects that a total of $100 million in statutory capital[11] will be sufficient to obtain the necessary triple A claims-paying rating.[12] Connie Lee expects to raise approximately $60 to $70 million of additional equity capital from private investors, including banks, colleges, universities, pension funds, foundations, etc.[13] and to begin operations as a direct insurer this year.[14] The corporation intends to use a portion of the additional equity capital to repurchase $10 million of the common stock held by Sallie Mae.[15]

Organization

By statute, Connie Lee is governed by an eleven-member Board of Directors. The Board is comprised of seven appointed directors (two by the Secretary of the Treasury, two by the Secretary of Education, and three by Sallie Mae) and four elected by the holders of Connie Lee's voting common stock, at least one of whom must be an administrator of a college or university. One of the eleven directors is elected annually by the Board to serve as Chairman. Directors serve for terms of one year or until their successors have been appointed, and any member appointed to fill a vacancy may be appointed only for the unexpired term of the director whom he succeeds.

If Sallie Mae acquires sufficient voting common stock from the Secretary of Education, as described above, so as to own more than 50 percent of the issued and outstanding voting common stock of Connie Lee, then the Board of Directors shall thereafter be elected entirely by the voting common shareholders.[16]

Business activities

Municipal bond insurance is a form of financial guarantee and is regulated under the insurance laws of the various States. Although Connie Lee was authorized by an Act of Congress, it is structured as a private corporation, subject to the same laws and regulations as any other company conducting an insurance business. Accordingly, it is necessary for Connie Lee to possess an insurance license in each of the States in which it conducts insurance activities. As a result, one of the first activities undertaken by Connie Lee was to purchase an existing insurance company shell which was already licensed to sell insurance in as many States as possible.

In December 1987, Sentry Indemnity Company located in Stevens Point, Wisconsin, was purchased and it became a wholly-owned subsidiary of Connie Lee. At the time of its acquisition, Sentry Indemnity Company was licensed in 35 States to conduct insurance activities. The purchase price for this company, renamed the Connie Lee Insurance Company, was financed by Sallie Mae under a short-term $18 million loan, which has been repaid. Connie Lee operates its insurance business entirely through the Connie Lee Insurance Company.

Connie Lee Insurance Company is now licensed in 42 States and the District of Columbia. The Company is organized as a monoline financial guarantee company; that is, financial guarantee insurance is the only product offered by the Company so that no other lines of business can be written against the same capital base.[17]

During the first phase of operation, Connie Lee began acting as a reinsurer on December 16, 1988 when it received its triple A rating from S&P. In this capacity, it acts as a secondary market for education bond insurance placed directly by primary guarantors or previously ceded to other reinsurers. This strategy encourages the primary insurers,[18] who command more than $2.5 billion in total capital, to increase their direct insurance in support of issues in the higher education and teaching hospital sectors of the market.[19]

Most of Connie Lee's reinsurance business is derived from treaties or agreements with primary insurers under which Connie Lee assumes a pro rata share of a primary bond insurer's exposure, which is the sum of the interest and principal payments on the insured bonds. The primary bond insurer collects an insurance premium from the bond issuer and then cedes a pro rata portion of the premium to Connie Lee, less a ceding commission (typically, 25-30 percent of the pro rata portion). In accordance with generally accepted accounting principles, the portion of the premium received by Connie Lee is earned on a pro rata basis over the life of the bond.[20] As of December 31, 1989, Connie Lee's exposure as a reinsurer totalled $1.7 billion.[21]

Connie Lee also enters into facultative agreements with primary insurers. Under such agreements, the corporation has the option to accept or reject business from a primary insurer on an issue-by-issue basis.[22]

In 1990 Connie Lee plans to become a primary insurer of academic facilities issues.[23] Connie Lee expects that, within a three-to-five year period after starting its direct insurance activities, it will become a significant source of credit enhancement for academic facilities obligations.[24]

It should be noted that Connie Lee derives a substantial portion of its income from investment earnings on its capital and unearned premium reserves. Unlike a typical life or property and casualty insurance company which receives premiums annually, or in some cases monthly and quarterly, Connie Lee normally receives the entire premium for the life of a policy at the time the policy is issued. Because these premiums are then earned over the life of the policy, a substantial unearned premium reserve to invest is created.

Unlike property and casualty insurance companies, Connie Lee, like other municipal bond insurers, writes to a "no loss" standard, which means it is insuring bonds which are not expected to default under normal economic conditions. If a default does occur, Connie Lee is obligated to continue making the scheduled payments of interest and principal. No acceleration of payment of principal is permitted.[25] In the event of a default, Connie Lee could invest funds to match the cash flow of the insured debt and maintain those investments. Full-line casualty insurance companies, on the other hand, must maintain sufficient reserves or investments to cover unanticipated market losses which can occur when investments must be liquidated in order to cover casualty loss insurance payments.[26]

Because it continually monitors the organizations whose bonds it insures, Connie Lee is in a position to know in advance of a pending claim and can adjust its liquidity and maturity positions as necessary so that it will be able to pay such claims. This ability to shape the investment portfolio in advance of claims requirements should enable Connie Lee to minimize investment losses that might occur when liquidating investments in unfavorable interest rate environments. Thus, Connie Lee's investment objectives are to preserve and add to its capital base, maintain its triple A rating, and maximize income, rather than to focus on liquidity to address claims payments.[27]

Relationship to Federal Government

As noted earlier, Congress structured Connie Lee as a private, for profit corporation, but provided for a limited infusion of Federal capital in the form of stock purchases by the Secretary of Education in order to get the corporation started. Unlike other Government-sponsored enterprises, however, Connie Lee does not operate under a Federal charter. Instead, Connie Lee is a private D.C. corporation operating through a Wisconsin-domiciled monoline insurance company.

The Federal Government currently holds $19.1 million of Connie Lee stock and can appoint four directors to its Board. Congress, however, clearly intended the Federal Government's direct interest to diminish and eventually terminate,[28] as evidenced by the statutory limitations placed on purchases of stock by the Secretary of Education and the authorization of the sale of such stock with a right of first refusal to Sallie Mae. Accordingly, Congress provided in Connie Lee's authorizing legislation that it will not be an agency, instrumentality, or establishment of the United States or a Government or Government-controlled corporation. Congress also provided that no obligations which are insured, guaranteed, or otherwise backed by Connie Lee will be full faith and credit obligations of the United States. The provisions, however, do not affect whether such obligations are to be considered federally guaranteed for purposes of Federal income taxes.[29] Also, Connie Lee is not exempt from Federal or State securities and insurance laws.

By virtue of its Congressional mandate to provide financial assistance to higher education institutions and its ownership by the Federal Government and Sallie Mae, a Government-sponsored enterprise, Connie Lee is perceived to have a special relationship with the Federal Government. As a result, Connie Lee is classified as a Government-sponsored enterprise for Federal budgetary purposes.

The importance of the Federal Government's relationship with Connie Lee was repeatedly stressed in documents prepared by Connie Lee for the February 4, 1987 meeting of its incorporators. In one such reference, Connie Lee stated that the Federal Government's $20 million capital contribution and perceived continued support would assure acceptance for Connie Lee's guarantee within the marketplace.[30]

S&P has indicated Connie Lee's status as a Government-sponsored enterprise was not a factor in granting Connie Lee a triple A rating as a bond reinsurer.[31] It should be noted that S&P's rating analysis for Connie Lee specifically states that:

> The U.S. Department of Education, while not obligated to provide future financial support, is solidly committed to this venture and its raison d'etre.[32]

Regulation and oversight

State regulation. Under the present regulatory framework, State insurance departments are responsible for regulating insurance companies and administering the liquidation of insolvent ones. Although Federal tax, securities and other laws have important impacts on insurance companies, the Federal Government has never been involved in direct regulation of the insurance industry. Congress affirmed this longstanding practice when it enacted the McCarran-Ferguson Act of 1945,[33] which declared that the continued regulation of the business of insurance by the States was in the public interest.

In February 1990, the Subcommittee on Oversight and Investigations of the House Committee on Energy and Commerce issued a report on its investigation into the causes of several recent insurance company failures in the United States. While the Subcommittee did not reach any conclusions, it raised serious questions about the effectiveness of the present regulatory framework in its report. The Subcommittee did not focus on the regulation of the financial guarantee insurance industry, nor did it propose specific legislation. However, hearings will be held to explore the proper role of the Federal Government in regulating the insurance industry.[34]

State laws and regulations concerning financial guarantee insurance have developed over the years. Municipal bond insurance was not introduced until the early 1970's. The volume and variety of such financial guarantees, however, soon expanded, and several large multiline property and casualty insurers began to offer the product. By the mid-1980's, the use of such financial guarantees became so widespread that it drew considerable attention from State insurance regulators.

The insurance industry, both regulators and companies, recognized the need to protect the public interest by ensuring that financial guarantors associated with multiline companies were protected against losses in other lines of the property and casualty insurance business. At the same time, the industry determined that an exclusive set of regulations should be established for financial guarantee insurers which would ensure that they were adequately capitalized, maintained reserves in high quality assets, and limited the level of risk associated with the various types of business that they underwrote. This was done in 1987 when the National Association of Insurance Commissioners (NAIC) adopted a Financial Guaranty Insurance Model Act.

The NAIC addressed the concerns about safety in the financial guarantee insurance industry in the Model Act in the following ways:

(1) The industry was required to become monoline.

(2) Minimum levels of capital necessary to enter and remain in business were set.

(3) Types of financial guarantees were classified according to perceived degrees of riskiness. The amounts of capital and reserves required to be maintained against insured risks were keyed to the type of risk. In addition, maximum limits per policy were established to limit the exposure to any one situation.

(4) The credit quality of investments in which the insurer's reserves were kept was required to meet high standards for safety and liquidity.

Since the Model Act was adopted by the NAIC, some States have enacted, or proposed for enactment, financial guarantee insurance legislation which has been patterned after it. The State of New York, a leader in the field of insurance regulation, adopted comprehensive financial guarantee insurance legislation in May 1989. As a result of the adoption of such legislation by New York and the adoption of financial guarantee legislation by some other States, all multiline companies have now ceased actively writing primary insurance, and all monoline companies, including Connie Lee Insurance Company, are complying with or are moving toward compliance with the financial guarantee laws.

Connie Lee Insurance Company (but not its parent holding company) is subject to the same State insurance laws and regulations applicable to any other insurance company. Because the Company must comply with the laws and regulations of all the 42 States (as well as the District of Columbia) in which it is licensed to do business, the Company is consequently required to be in compliance with the most stringent provisions of any of such States.[35]

Primary regulatory responsibility for a particular insurance company lies with the insurance regulators in the State of domicile. Insurance regulators reviewing companies which are licensed, but not incorporated, in their State often defer to the judgement of the regulators of the State of domicile or to the New York State Insurance Commissioner. New York State insurance laws and regulations are generally the most strict. Approval of an insurance company by the Insurance Commissioner of the State of New York, or by the insurance regulators of the State of domicile, has a great deal of influence on other State insurance commissioners.[36]

State insurance laws require insurance companies to file quarterly and annual financial reports in each State in which the company is licensed to do business as to its capital, ownership and financial condition. All such statements must be prepared in accordance with statutory accounting procedures, which are conservative and emphasize the solvency of the insurer.[37] The filing of reports with each State regulator, however, does not ensure that all regulators give such reports close scrutiny.

Insurance companies are also subject to periodic on-site audits by the insurance department in their State of domicile, as well as by any other State which deems it necessary. The Office of the Commissioner of Insurance of the State of Wisconsin (Wisconsin OCI), where Connie Lee Insurance Company is domiciled, intends to conduct on-site examinations of the Company every three to five years. In this regard, Connie Lee Insurance Company was examined by the Wisconsin OCI in September 1989.[38] A final report was released to the public in April 1990 and included no significant findings.

Wisconsin OCI has indicated that Connie Lee Insurance Company has received and will receive the same treatment as other insurance companies within its jurisdiction, and that the relationship of the insurance company or its parent holding company to the Federal Government will not be a factor in its regulation of the Company. Moreover, because the first, and now one of the largest, municipal bond insurers (AMBAC Indemnity Corporation) is also domiciled in Wisconsin, the Wisconsin OCI feels that it has ample experience in regulating municipal bond insurance companies.[39]

In order to enforce compliance with State laws and regulation, State insurance regulators can impose a variety of penalties. These penalties can include fines ranging up to several hundred thousand dollars and in the extreme may involve suspension or loss of license. Wisconsin OCI also has the authority to replace Connie Lee Insurance Company's officers and directors,[40] require additional reserves, require the Company to hire consultants at its own expense, and put the Company into conservatorship.[41]

Connie Lee triple A rating requirements. The economic value in the marketplace of a financial guarantor's insurance is determined entirely by its claims-paying rating as established by a nationally recognized statistical rating organization. To be of benefit to an otherwise investment-grade issuer, a financial guarantor or reinsurer must have a triple A claims-paying rating from at least one of the nationally recognized agencies. Accordingly, the rating agency possesses de facto regulatory control of a financial guarantee company.

As mentioned earlier, S&P has rated Connie Lee's claims-paying ability as a reinsurer to be triple A and did not consider Connie Lee's GSE status in making its rating determination. Before assigning its triple A rating to Connie Lee or any other guarantor, S&P analyzes the ability of an insurance company to continue to pay claims during both normal periods, as well as during a period of severe national economic decline, such as the Great Depression. It considers the capitalization of the insurer, future access to capital, ownership, projected cash flow, the diversification and quality of its insured portfolio, and the quality of its investment portfolio.[42] Furthermore, the insurer's underwriting standards and process for evaluating bonds, management expertise, systems, and certain other administrative factors are taken into account in rating claims-paying ability.

S&P also applies guidelines and sets limits which are intended to ensure the continuance of its rating. The most important limitation restricts the volume of insurance which can be outstanding as a percentage of the insurer's capital and surplus. The rating agency also limits the total insurance exposure which the guarantor can have outstanding to any single credit.

The standards applied for evaluation by the rating agencies are generally even more stringent than those applied by the insurance regulators. This is because any failure of a rated insurer would diminish the credibility of the rating agency and cause the value of its triple A rating to suffer, as compared to the value of comparable ratings of competing rating agencies.[43]

Federal regulation. The Federal Government has very little oversight responsibility for the activities of Connie Lee. In this regard, the Department of Education stated in its February 1, 1990 letter to Treasury:

> Connie Lee is not considered an agency, instrumentality, or establishment of the Federal government and is further not to be considered either a government corporation or a government-controlled corporation. Hence, the Department of Education has limited oversight responsibility for the activities of Connie Lee and it has not conducted any evaluation of the risks of the Association's operations.
>
> The one area where the Department has a degree of oversight responsibility is in the Secretary of Education's authority to appoint two members to the Association's 11-member board of directors. These two appointments have been made.
>
> The Department's major involvement to date with Connie Lee has been a transfer to the Association of $19,148,000 in Federal funds as start-up capital. This transfer was mandated as part of the Congressional appropriations process.[44]

It should be noted that the Secretary of the Treasury has also appointed two directors to Connie Lee's Board of Directors, as prescribed by P.L. 99-498. Also, Connie Lee is not exempt from Federal or State securities or insurance laws, as was mentioned earlier.

By statute, Connie Lee is required to maintain its books of account in accordance with generally accepted accounting principles and to subject the books of account of the corporation to an annual audit by an independent public accountant. Coopers & Lybrand, a nationally recognized auditing firm, has been retained to perform such audits.

Connie Lee is also required to submit to the President and Congress annually and at such times as Connie Lee deems it to be desirable a report of its operations and activities. The annual report must include:

> (1) a copy of the corporation's financial statements and the opinion with respect to such statements prepared by the independent public accountant reviewing the statements;
>
> (2) any report on the required annual audit of the corporation's books of account by an independent public accountant; and
>
> (3) such information and other evidence as is necessary to demonstrate that the corporation has complied with the percentage allocation requirements for its insurance, reinsurance, and guarantee activities.[45]

Connie Lee submits financial statements of its activities to the Office of Management and Budget, in conjunction with the latter's preparation of the President's Budget. This information is supplied shortly after the close of the Federal Government's fiscal year.

Outlays of Government-sponsored enterprises are not included in the President's Budget because the enterprises are classified as being private. However, because of their relationship to the Government, detailed statements of the financial operations and conditions of such enterprises are presented in the Budget, to the extent such information is available, on a basis that is as consistent as possible with that used for Government agency budget data. These statements, however, are not reviewed by the President, but rather are presented as submitted by the enterprises.[46]

FINANCIAL SAFETY AND SOUNDNESS OF CONNIE LEE

In order to assess the financial safety and soundness of Connie Lee, the degree of risk involved in the corporation's operations due to such factors as credit risk, interest rate risk, management and operations risk, and business risk and also Connie Lee's capital were examined. In addition, the quality and timeliness of information currently available to the Federal Government and the public concerning Connie Lee's operations and the financial risks associated with such operations were assessed. The results of these analyses are presented in the following sections of the study.

It should be noted that Treasury experienced great difficulty in obtaining necessary information from Connie Lee during the study period. On April 25, 1990 a copy of the proposed study of Connie Lee was provided to the corporation for a review of its factual accuracy. Connie Lee disputed certain statements in the study and submitted additional documents to Treasury in order to support its position. The statements in the study were based on information received during extensive meetings with Connie Lee and on documents provided by the corporation in response to requests for specific written policies, plans, and procedures. On May 1 Connie Lee submitted still more documents.

On May 17 Treasury met with Connie Lee to discuss the new information and received additional documents, some of which, however, had only recently been created. Where possible, the new information has been incorporated into the study.

While the level of cooperation from Connie Lee was greatly improved at the May 17 meeting, Treasury will keep Congress informed as to its progress in securing information from the corporation during the second study.

Credit Risk

Overview

The most important risk facing Connie Lee[47] is credit risk, which is the risk of loss due to default. By statute, Connie Lee is required to insure bonds in a relatively risky segment of the municipal bond market.[48] Once the insurance is contracted, Connie Lee cannot cancel the insurance for the life of the issue or adjust the premium to correct for any errors in judgment or to reflect subsequent changes in the credit quality of the bond issuer. Thus, it is imperative that Connie Lee carefully control credit risk at the contracting stage as a reinsurer and at the underwriting stage as a primary insurer in order to minimize the risk of default. While S&P and State regulators place limits on the amount of credit risk Connie Lee can assume, the Federal Government should carefully monitor such risk in view of its investment in Connie Lee. An analysis of factors affecting Connie Lee's credit risk follows.

Claims-paying ability

Connie Lee presently offers reinsurance of eligible facilities bonds in compliance with its authorizing statute. As of December 31, 1989, Connie Lee had reinsured approximately 550 individual policies or bond issues with an exposure to Connie Lee of $1.7 billion and an average final maturity of approximately 25 years. The business being booked is restricted to investment-grade securities, of which more than 50 percent is comprised of bonds with uninsured credit quality characteristics of single A or better. The reinsured portfolio is comprised of 70 percent teaching hospital facility bonds and 30 percent college and university facility bonds.[49]

Connie Lee's efforts to control credit risk are largely defined by the standards set by S&P and insurance regulators in the States in which it does business. S&P's standards relate to the corporation's earnings, its exposure/capital ratio, and the underwriting profile of its portfolio of insured risks. Connie Lee is also subject to S&P's single risk limits, which are based on the maximum loss a bond insurer could write off and still maintain its existing triple A rating. This rating reflects S&P's judgement that the insurer will remain solvent, even under conditions of severe financial stress. S&P reviews the rating on an annual basis. Significant deviation from S&P's standards could result in a lowering of Connie Lee's rating, which would effectively preclude it from taking on new business.

Connie Lee has indicated that it assesses each piece of new business on the basis of S&P's standards in order to protect its rating. Some previously reinsured issues have deteriorated in credit quality due to recent stress in the hospital and education sectors, but there has not been an overall reduction in credit quality of Connie Lee's insured portfolio.[50] Connie Lee management has indicated that while it cannot predict whether the stress in these sectors will continue, it will take steps to reduce the corporation's risk, if necessary; for example, selecting only higher quality bonds in those sectors or reducing its risk by securing reinsurance on such bonds.[51]

Connie Lee's current level of exposure is low relative to its capital, as reflected by its exposure/statutory capital ratio of 30.8:1. Bond insurers/reinsurers are required under State insurance regulation to operate with ratios of less than 200:1. Therefore, the addition of new reinsurance business should not lead to a deterioration in the claims-paying ability of the corporation.

The review by S&P reflects what it determines to be the adequacy of policy payout coverage on new business added since the prior review. Since the review is an ex post facto analysis, the corporation is at risk if it has already written less than acceptable policies in the interim period.

As noted earlier, Connie Lee is subject to insurance regulation in each State where it is licensed to do business. Requirements with a bearing on credit risk include:

(1) average annual debt service with respect to a single institution cannot exceed ten percent of policyholders' surplus;

(2) the exposure/capital ratio cannot exceed 200:1; and

(3) a contingency loss reserve must be established, the size of which depends on the type of bonds being insured.

As discussed earlier, States have a wide range of powers available to enforce these insurance regulations. The effectiveness of States in enforcing their insurance regulations, however, is one of the issues currently being studied by the House Committee on Energy and Commerce.

Underwriting

Connie Lee reinsures, and intends to insure, only investment-grade bonds for two reasons. First, several State insurance laws require that at least 95 percent of an insurance company's exposure be from bonds of investment-grade. Second, in its annual review of Connie Lee's claims-paying rating and capital adequacy, S&P will require substantially more capital for bonds which are less than investment grade.

Under normal economic conditions, investment-grade issues are not expected to default. To date, losses incurred by financial guarantors of investment-grade municipal bonds have been minimal, and none of the bonds reinsured by Connie Lee has defaulted.

As a reinsurer, Connie Lee enters into two types of arrangements with primary insurers: treaties and facultative agreements. Under the terms of a treaty, Connie Lee is obligated to assume a share of a primary insurer's book of business. Rather than rate the individual issues, Connie Lee reviews the underwriting standards and procedures of the primary insurer to determine whether the primary insurer has prior experience with the subject business, has complete and consistent underwriting data, and charges adequate premiums. The corporation also evaluates the primary insurer's surveillance and settlement process by reviewing the credit review system, distressed credit process and claim settlement process, as well as by determining the adequacy of loss reserves. Finally, Connie Lee evaluates the financial stability of each primary insurer or reinsurer with which it engages in business, preparing management reviews and financial statement analyses.

Connie Lee also has the opportunity of full recourse to the primary insurer if the underwriting standards are not in compliance with the terms of the treaty. Connie Lee requires that the ceding primary insurer retain at least 25 percent of each issue's total exposure. Additionally, primary insurers are reluctant to offer only their lowest quality credits to Connie Lee, since such adverse selection would damage the insurers' reputation and make it difficult for them to secure future reinsurance from Connie Lee or others.

Under the terms of a facultative reinsurance agreement, Connie Lee has the option to accept or reject business from a financial guarantor on an issue-by-issue basis. Connie Lee's analysts (four now, with several additional analysts authorized) follow the underwriting criteria established by the corporation to evaluate the credit quality of particular issues. Connie Lee has indicated that its underwriting criteria are patterned after the criteria used by S&P to evaluate credit risk.[52]

All potential offerings to Connie Lee are reviewed by the Underwriting Department and are subsequently reviewed by the management Underwriting Committee, comprised of the CEO, the CFO, the Senior Vice-President of Underwriting, and General Counsel. When issues fall within certain parameters, or if the management Underwriting Committee deems it appropriate, issues are reported to the Board of Directors' Underwriting Committee for further review and approval. The minimum parameters used in reporting issues to the Board of Directors' Underwriting Committee are:

(1) Any issue greater than $45 million in par;

(2) Any issue with a premium rate set below the floor established by the Board for the issue's credit rating; and

(3) Any issue assigned an internal numerical score or rating below 65. (A score of 65 corresponds to a mid-triple B rating by S&P.)

It should also be noted that the Board's Underwriting Committee includes one of the four federally appointed directors to the Board.

As a primary insurer, Connie Lee will subject institutions to a more thorough examination than it does for facultative reinsurance agreements by utilizing additional criteria to determine the insurability of academic facility credit. In addition, institutions will be required to meet certain criteria to be eligible for a full review by Connie Lee's underwriting team. This full review may include a site visit and interviews with key management of the institutions.

Pricing of premiums

Connie Lee will provide bond insurance to issuers in return for a premium, the amount of which depends on the credit quality of the issue and the competitive "market price" of insurance for that issue. The premiums are based upon a percentage of the total amount of debt service to be paid by the issuer over the life of the bonds. Since the insurance premium is received when insurance is first contracted, Connie Lee cannot adjust the premium over the life of the issue to correct for any errors in judgement or to reflect changes in the credit quality of the bond issuer.

There is not a strong correlation between the general level of premiums in the industry and credit risk. Because of competition among bond insurers and the uncertainty of the yield spread between insured and uninsured bonds, there is no guarantee that insurers will be able to charge premiums which reflect the risk of default of an issue under adverse economic conditions.[53] There is the risk then that Connie Lee could charge premiums which do not fully account for credit risk. While S&P and the State regulators examine the level of premium income, they are primarily concerned with the capital adequacy of the firm.

Monitoring and surveillance

Since Connie Lee cannot cancel any insurance which it has extended, proper monitoring and surveillance of its book of business is extremely important if it is to act to prevent defaults. The earlier a problem with an institution is detected, the more likely the corporation will be able to help the institution remedy the situation.

In its reinsurance business, Connie Lee relies primarily on the primary insurer to monitor the credit aspects of the institutional debt insured. However, the corporation does periodically review credits in its portfolio. With the advent of primary insurance capability, Connie Lee intends to review risks at least annually and develop criteria to quantitatively evaluate the institutions. If a problem develops with an institution, Connie Lee will increase reviews of its exposure and initiate visits with the institution's management.[54]

The municipal bond insurance industry has developed the following methods for avoiding and controlling losses:

(1) monitoring deteriorating credits;

(2) working with problem credits to avoid monetary defaults; and

(3) recovering salvage.

Prior to experiencing a loss, an insurer may take a number of steps to ease or manage the issuer's situation, including restructuring the institution's debt obligations through refinancing, obtaining outside assistance in the form of management studies and financial assistance, and merging the distressed institution with a stronger one. Salvage recovery may be accomplished through realization on collateral security or third party guarantees; collection of proceeds of Federal, State, and private insurance, participation on creditor committees, and litigation.[55]

Public purpose and default risk

Connie Lee is required by statute to insure only bonds which finance educational facilities, which include colleges, universities and teaching hospitals. The rating agencies consider these bonds to be in high risk sectors of the municipal bond market and adjust their capital requirements accordingly.[56] Some analysts expect that there will be a "shakeout" in the health care industry with the potential for defaults from some of the smaller hospitals.[57] Smaller hospitals consolidating with larger ones may prevent many potential defaults from actually occurring. However, proposed changes in Medicare reimbursements may adversely affect teaching hospitals.[58]

Connie Lee is also required by statute to provide primary insurance only to those educational institutions which without insurance would be listed below the third highest rating of a nationally recognized SRO. As a result, the overall quality of the corporation's insured bond portfolio may diminish, depending on the structure of particular issues and the mix of reinsurance to insurance. It should be noted that individual insured obligations may be structured with letters of credit or benefit from guarantees or the pledge of particular revenue streams and thus, maintain a higher credit quality than that of the institution.

The statutory limitation on Connie Lee's primary insurance to institutions which would be listed below the third highest rating of a nationally recognized SRO will also affect how much capital S&P will require Connie Lee to have to conduct its business. S&P's capital allocation model, which determines capital requirements based on credit risk, normally assumes that half of the issues in an insured bond portfolio would be rated single A if uninsured, and half would be rated triple B. In the case of Connie Lee, because it will be insuring only medium credit quality bonds in a narrow segment of the market, S&P will require Connie Lee to pass its stress test with a higher capital sufficiency than would normally be required.[59]

The statutory requirement to insure only educational facilities bonds effectively limits the degree to which Connie Lee can achieve portfolio diversification. Diversification lowers credit risk by reducing the probability that a large number of issues would be similarly affected by an adverse change in conditions. The corporation has established diversification criteria within its target market based, in part, on geographic dispersion (limited by the geographical concentration of colleges and universities), bond maturity, type of facility, industry sector and security pledge. It also intends to balance its exposure in teaching hospital and college and university segments.[60] However, Connie Lee cannot match the degree of diversification achieved by full-line guarantors, which can insure across all municipal bond sectors.

Credit quality of the investment portfolio

As noted earlier, Connie Lee, like other municipal bond insurers, writes to a "no loss" standard, which means it is insuring bonds which are not expected to default under normal economic conditions. If a default does occur, Connie Lee is obligated to continue making the scheduled payments of interest and principal. No acceleration of payment of principal is permitted. Thus, Connie Lee's investment objectives are to preserve and add to its capital base, maintain its triple A rating, and maximize income, rather than to focus on maintaining the liquidity needed to address frequent claims payments, as a full-line insurer must.

The Finance and Investment Committee of Connie Lee's Board of Directors establishes general procedures and guidelines for investments, including limitations on average maturities, size of holdings and the quality of permitted investments. These guidelines are reviewed on a regular basis and revised as market conditions and operating results vary over time. In addition to the corporation's investment guidelines, State insurance departments have established limits on the types of investments, size of holdings, and quality of investments held by a bond insurer. Connie Lee is precluded by State law from engaging in any sophisticated investment techniques, such as interest rate swaps.

Connie Lee has retained the services of Stein Roe & Farnham, Inc., a professional investment adviser, to advise the corporation on investment policy and execute such policy. Under policies adopted by the Board of Directors, the investment adviser maintains a portfolio of high quality, taxable securities consistent with the objectives of low risk, generation of current income, and long-term capital growth.[61] As of February 28, 1990, approximately 59 percent of Connie Lee's $67.6 million investment portfolio was in taxable securities rated triple A and double A-plus; 16 percent rated double A; and 25 percent rated single A; yielding approximately 9.1 percent with a duration of 3.5 years. The remainder of Connie Lee's invested assets were in cash and cash equivalent Government and Government agency securities.[62]

Conclusions and recommendations

While Connie Lee has demonstrated an understanding of the critical elements of credit risk, its underwriting process is subjective, particularly with respect to the internal numerical scoring or rating system which the corporation uses to assess credit risk. This system is patterned after the S&P rating system. Although Connie Lee's credit analysts prepare detailed credit reports which analyze the financial performance of the issuer and other factors upon which their credit recommendations are based, the actual numerical score that an issue receives is entirely up to the judgment of the managing analyst. Thus, one analyst could perceive an issue to be a 78, while another could perceive it to be only a 64.

In general, Connie Lee appears to provide few detailed procedural guidelines to assist its credit analysts in developing their credit recommendations. Instead, Connie Lee attempts to hire only highly experienced analysts and thereby, relies on their previous underwriting experience and training. A more formalized system of underwriting procedures, however, should be established and approved by the Board of Directors in order to ensure that Connie Lee's analysts are assessing credit risk in accordance with its Board-approved underwriting criteria and to provide a measurement basis for an independent review of the credit decision process. This is especially important in view of the recent turnover of analysts which the corporation has experienced. An internal audit function should also be created in order to provide an independent review of Connie Lee's credit decisions. In addition, an information system to track the higher exposure that the corporation will experience as a primary insurer should be established.

It is not clear that the Federal Government should rely solely on S&P and State regulators to adequately oversee Connie Lee's business activities. S&P has indicated that it does not routinely review all credits on the book of an insurer beyond its initial rating. It does sample the portfolio periodically (usually every other year), but relies mainly on the corporation's management to report any deterioration in a bond's credit quality.[63]

With regard to State regulation, Wisconsin, as Connie Lee Insurance Company's State of domicile, has the primary responsibility for regulating Connie Lee's business activities.

While Wisconsin has not yet passed the Model Act, it does have experience in regulating financial guarantors. Wisconsin insurance reviews, however, will be conducted only every three to five years. Consequently, the Federal Government should carefully monitor Connie Lee's business activities on an annual basis.

By statute, Connie Lee is required to submit an annual report to Congress and the President which includes a report on the required annual audit of its books of account by an independent public accountant. Connie Lee's audit firm should be asked to review the corporation's underwriting and surveillance policies and procedures and should include its findings on these documents in its audit report on Connie Lee. The Federal Government would then have an independent annual review of these policies and procedures.

There is the risk, as a result of competitive pressures, that bond insurers, including Connie Lee, might be willing to collect insurance premiums which cover underwriting costs, but do not adequately compensate for credit risk. Any additional oversight of Connie Lee should include the responsibility to monitor the size of premiums collected by Connie Lee.

Connie Lee faces potential credit risk in its investment portfolio. However, it minimizes this risk by investing in high quality taxable securities and Government securities.

Connie Lee currently has more than sufficient capital to protect against the credit risk it is assuming as a reinsurer. As a primary insurer, Connie Lee will be restricted by statute to operate in a narrow segment of the municipal bond insurance market and insure only bonds which would otherwise receive a medium credit quality rating. This will result in additional credit risk and will require Connie Lee to be very selective in determining acceptable issues to insure. S&P, which rates Connie Lee's claims-paying ability, will require additional capital to compensate for this risk.

Interest Rate Risk

Overview

Connie Lee faces little or no interest rate risk.

Analysis

Interest rate risk is usually defined as the risk that the value of a firm's assets will react differently to a change in interest rates from the value of its liabilities. Since Connie Lee has no outstanding debt on its balance sheet, the value of its liabilities will not be directly affected by movements in interest rates. Moreover, Connie Lee is unlikely to increase its liabilities through debt financing in the foreseeable future, because insurance regulators and rating agencies generally prefer that insurance companies raise funds through the issuance of equity rather than debt.

Changes in interest rates will affect the value of Connie Lee's assets because its investment portfolio is comprised largely of fixed-income securities. For example, if interest rates were to rise, the market value of Connie Lee's fixed-income investments would fall. A measure of this market risk is given by the duration of Connie Lee's investment portfolio, which was 3.5 years as of February 28, 1990.

In managing its investment portfolio, Connie Lee does not attempt to match the duration of its assets with that of its liabilities because, as explained above, it does not have any interest rate sensitive liabilities. Further, Connie Lee expects that the amount of payments that it would be required to make to honor its bond insurance contracts would be small enough that it would not have to liquidate any of its fixed-income assets. This belief is based on two considerations:

> (1) in the event of an insured bond default, bond insurance contracts do not call for the acceleration of the repayment of principal; and
>
> (2) the probability of a default, even for triple B rated bonds, is very low because of Connie Lee's underwriting standards.

In the normal course of operations, Connie Lee could use its investment income to make payments to honor its bond insurance contracts.

However, if Connie Lee had to sell some of its securities unexpectedly and their market value had decreased, the corporation could suffer a loss. In managing its investment portfolio, Connie Lee (or its investment adviser) must strike a balance between the incentive to increase investment income by purchasing longer-term fixed-income securities and the risk that such assets might have to be sold prior to maturity at a loss. Given that bond defaults do not cause acceleration of the repayment of principal, the duration of Connie Lee's investment portfolio seems to be appropriate. Connie Lee can use assets to immunize the liabilities that it might have to assume as a result of any default. This would require duration matching of the remaining cash flows of a defaulted bond issue.

Connie Lee is also subject to reinvestment risk; that is, the risk that a fall in interest rates will reduce the rate of return when interest payments are reinvested, thus reducing the overall return on the portfolio. This is a normal risk faced by all fixed-income investors. Connie Lee faces no greater reinvestment risk than any other investor.

Conclusions

Connie Lee is subject to little or no interest rate risk. Because Connie Lee has no interest rate sensitive liabilities, it does not face the risk that the value of its assets will react differently to a change in interest rates from the value of its liabilities.

Changes in interest rates will affect the market value of Connie Lee's assets because its investment portfolio consists largely of fixed income securities. However, as measured by the relatively short duration of the portfolio, this market risk is small.

Because bond defaults do not cause acceleration of repayment of principal, the duration of Connie Lee's investment portfolio appears to be appropriate. Connie Lee can use assets to immunize any liabilities that it might have to assume because of defaults.

Management and Operations Risk

Overview

Connie Lee has established the controls, monitoring, and information systems necessary to monitor its management and operations risks for its present business activity, which is reinsurance. However, no explicit plans for its entry into the primary insurance business were available for review until May 1990. On May 1 Treasury received Connie Lee's 1990 business plan, which was approved by its Board of Directors on April 11 and includes projections for both reinsurance and primary insurance. On May 17 Treasury received Connie Lee's Private Placement Memorandum. Where possible, this new information was incorporated into the analysis which follows.

Planning

Connie Lee operates a formal planning process under the direction of the President and the CFO. Plans are approved by the Board of Directors. Planning occurs principally during the preparation of the annual budget and business plan, and includes input from all senior management.[64] Connie Lee does not have a formal strategic plan, but considers the five-year plan included in its Private Placement Memorandum as a type of strategic plan. This plan is largely quantitative in nature, detailing business projections for the next five years. It will be reviewed, updated, and adjusted annually to reflect current operations and used to assess overall business performance and determine long-term goals.[65]

Connie Lee's 1989 business plan was for reinsurance only. Its 1990 plan, however, includes projections for both reinsurance and primary insurance. The annual business plans principally address Connie Lee's immediate objectives and revenue/expense forecasts. Forecasts are prepared for balance sheet and income statements based on projections of the total volume of municipal bond underwriting and estimates of Connie Lee's potential market share.

Actual performance fell short of projections in the 1989 business plan by significant margins. Based on results available as of mid-December 1989, after tax net income for the year was nearly 30 percent below the 1989 plan. Net premiums earned were 33 percent below plan, and net investment income was 11 percent below plan.[66] Management has stated that the reason for the significant variances from the 1989 projections was that the projections were prepared without the benefit of operating experience in the narrow reinsurance market targeted by the corporation. Capital adequacy is actively considered in the planning process; under New York State law, Connie Lee must have a minimum of $75 million in capital by May 1992. Connie Lee intends to exceed the minimum level.[67]

Management has stated that the formulation of the 1990 business plan is documented in detail in workpapers and variances to the plan are analyzed and presented to the Board quarterly in the Management Decision and Analysis Report.

As part of the annual budget monitoring process, the CFO generates monthly financial reports that measure actual performance relative to the budget and present budget variances. The reports are distributed monthly to senior officers and the President. In addition, the Board reviews summary reports of Connie Lee's financial performance at each meeting. Management makes a semiannual presentation to the Board concerning the status of actual results versus the plan, changes to the plan and the associated reasons, and any special areas of interest.

Policy making

Connie Lee's policy- and decision-making process works primarily through a senior executive officer committee. Management decides which policy initiatives and policy changes should be submitted to the Board for its review and approval. While this process is suitable for a small organization that is performing a relatively low volume of business -- an environment that typically features close communication among senior management and easy visibility of their actions by the Board -- the process would be expected to become more formal as the organization grows and the volume of transactions increases.

Policy making is best described as intimate and tightly held among the senior executives. This has occurred mainly because Connie Lee is a small, newly organized company (total staff of 26, of which 5 are senior executives).[68] Typically, policy-making initiatives originate with the Senior Management Committee (the SMC), are developed by senior managers in concert with their staff, and -- if deemed necessary -- are transmitted to the Board through the President. For example, if the SMC decides that a proposal or change is an exception to established policy, the proposal is sent to one of five standing committees of the Board of Directors[69] for review and presentation to the full Board. Connie Lee reported that the Board is most heavily involved in reviewing underwriting standards; its policy review in other areas appears to be more general.

Control systems

Control systems were discussed with the CFO to determine what systems exist to monitor Connie Lee's activities and inform management of the overall soundness of these activities. Should Connie Lee's business volume in primary municipal bond insurance underwriting grow as expected, then its current control systems will have to be more fully developed to ensure that such growth is prudent. As indicated earlier, Connie Lee needs to develop a more formalized control system for its underwriting activities, including detailed procedural guidelines for its analysts to follow in developing credit recommendations and an independent credit review function.

Reviews for compliance with policies and procedures for day-to-day operations are the responsibility of the respective department heads. The principal independent review for compliance is performed by Connie Lee's external auditors, supplemented by reviews conducted by S&P and the Wisconsin insurance regulatory agency.

Connie Lee does not have an internal audit department and does not plan to establish one in the foreseeable future. The principal reasons for this policy include:

(1) the corporation's current small size and low business volume;

(2) management's desire to hold down operating expenses, especially during the company's formative stage;

(3) the presence of three outside reviewers (CPA firm, S&P, and State regulator);

(4) the absence of any legal requirement for an internal auditor; and

(5) the fact that two well-known financial insurance companies operated without one during their initial start-up periods.[70]

While the Board of Directors does not benefit from the presence of an internal auditor, both the Audit Committee and the full Board receive reports from the three outside reviewers. These reports assist the Board in its exercise of oversight. In addition, Connie Lee plans to appoint an internal auditor if it becomes a publicly traded firm.

In areas other than underwriting standards, the Board sets only the general guidelines for policies and procedures to be followed by management; as a result, senior management has wider responsibilities in these areas. Management stated that operating procedures and controls have been established in all major areas to address financial management and reporting, risk management, computer operations and personnel policies and procedures. Efforts to detect and correct deficiencies are informal; each senior vice president must maintain constant oversight to ensure sound operations and compliance with procedures. At present, there are no internal deficiency reports concerning lack of adherence to policies and procedures. The independent control check for compliance with policies and procedures, and for proper functioning of internal controls, is totally placed on external auditors. Such reports would be an important feature of internal controls as Connie Lee's business volume develops.

As noted above, Connie Lee undergoes external audits from three sources. First, S&P performs an annual review of controls as they relate to management and operations risks; the outcome of this review strongly influences the rating S&P assigns to Connie Lee. Second, to establish that Connie Lee complies with all of its requirements, the Wisconsin insurance regulatory agency performs every three to five years an on-site review for adequacy of Connie Lee's policies and procedures, and for its compliance with them. Third, Connie Lee's public accounting firm performs an annual audit. The firm's report and comments are reviewed and discussed with the Board's Audit Committee. The Committee meets with the firm alone to discuss the issues in the management letter.

The 1988 management letter commented on issues regarding Connie Lee's management information systems and taxes; the letter also documented management's responses to these issues, none of which were considered material (or even significant weaknesses) by the firm. No material conditions were reported in the 1989 management letter.

Management information systems

Management information systems (MIS) controls exist to provide directors and management with necessary and accurate information to guide operations and make decisions.[71] Because the organization is small, much information is communicated verbally; the President and CFO determine which reports senior management and the Board need, unless the Board makes a specific request. Management stated that it has the plans and systems to accommodate the business as it grows. The external auditors have not indicated a need for more information for management or the Board.

Connie Lee currently utilizes several automated systems to provide information. An accounting system consisting of accounts payable, accounts receivable, budget and general ledger subsystems provides most of the corporation's financial information reporting. This system generates reports for management and the Board primarily on budget variances, sources and uses of funds, staffing plans, and portfolio summaries.

The Controller and CFO review all reports for accuracy before release. The system is reviewed annually by S&P and

Coopers & Lybrand to ensure accuracy and integrity of data. At present, Connie Lee's MIS is not backed up by a disaster recovery system, either internally or via an external vendor. Implementation of a disaster recovery system was recommended by Coopers & Lybrand in the 1989 management letter.

Business systems are developed on an as-needed basis. Not all reports are currently system-based, such as the revenue projections; however, Connie Lee expects to have many of its reports system-based and integrated by year end. Because there are few predesigned software packages available to support financial guarantee insurance, as well as Connie Lee's unique systems requirements, the corporation has designed a comprehensive new business system, the Automated Risk Management System, which automates the information management of all its major insurance and reinsurance functions. This system is currently being implemented in a staged approach. The GAAP earned premium subsystem has been completed and a transaction processing subsystem is in the developmental stage. It is anticipated that the major subsystems of the business system will be completed within the next twelve months. Connie Lee is also evaluating an existing system designed to accommodate both reinsurance and primary insurance.

Personnel administration

Because Connie Lee is new and affiliated with Sallie Mae, many of its administrative policies and procedures and its organizational structure are patterned after Sallie Mae. The organizational structure reflects functional responsibilities and lines of authority. There are four business areas and one back office area, each headed by a senior vice president.

Management stated that personnel policies and procedures are in writing and that Sallie Mae's personnel staff continues to provide administrative assistance. Recruitment is accomplished through industry contacts, personnel agencies and newspaper ads. There is no formal recruiting system nor does management foresee a need for one. Connie Lee also employs a consultant to perform a compensation study of the industry to ensure that salaries and benefits are equitable and competitive.

Management succession plans are not yet addressed. However, each SVP is responsible for recruiting a strong backup person to provide continuity in the event of turnover. Management stated that while this is an informal process, it believes that it provides for adequate backup. However, it should be noted that credit administration could not be discussed during the interviews because the only executive knowledgeable enough to respond to questions was not available.

Management uses various methods to promote effective communication within the system. Corporate policies and procedures are provided in several manuals -- administration and accounting. Weekly senior executive and staff meetings are held to communicate and share information. Periodically, all personnel attend a progress report meeting held by the President and senior management.

Conclusions and recommendations

No material issues related to management or operations risks were found. Connie Lee has established control, monitoring and information systems necessary for its present business activity, which is reinsurance.

Connie Lee remains in the formative stages of its operations and has only recently developed explicit plans for entering its major business, offering primary municipal bond insurance. Due to the late receipt of Connie Lee's written plans to enter the primary municipal bond insurance business, only very general opinions regarding Connie Lee's capacity to control management and operations risk in this business activity can be expressed. Connie Lee will need to develop its current control system more fully as its business volume in primary insurance underwriting grows. In particular, the corporation should develop a more formalized control system for its underwriting activities. Moreover, internal deficiency reports which document lack of adherence to established policies and procedures should be required.

Business Risk

Overview

Business risk in the municipal bond insurance industry can be defined as the risk that changes in industry structure or in the demand for bond insurance would adversely affect an individual insurer. If Connie Lee were unable to generate enough business of an acceptable credit quality, either because of intense competition or a lack of demand for bond insurance, there is the potential risk that it would not be able to cover its costs. The corporation's capital would decline, which in the extreme could result in insolvency.

Industry structure

Connie Lee currently faces competition from two monoline municipal bond reinsurers, Enhance Reinsurance Company and Capital Reinsurance Company, and approximately twenty-five multiline insurance companies. The market for primary insurance of municipal bonds was dominated in 1989 by four firms: Municipal Bond Investors Assurance, Inc. (MBIA), AMBAC Indemnity Corporation, Financial Guarantee Insurance Company (FGIC), and Bond Investors Guaranty (BIG). Together, these firms accounted for 97.4 percent of the municipal bond insurance written in 1989. A fifth firm, Capital Guaranty Insurance Company, had a 2.5 percent share of the market. BIG, the fourth ranked municipal bond insurer for 1989, was purchased by MBIA in January 1990. Financial Security Assurance Inc., a financial guarantee firm that has specialized in taxable and structured corporate deals, recently announced plans to enter the municipal bond insurance industry.

It is unlikely that many new monoline insurance companies will be entering this market in the near future. High capital requirements, an expected low return on equity for the first several years[72], and State licensing requirements act as significant barriers to entry into the industry.

Connie Lee will be competing with several well established municipal bond insurers on becoming a primary bond insurer. Unlike these full-line insurers, Connie Lee will be targeting a very narrow segment of the municipal bond insurance market in order to comply with its authorizing statute, and will be insuring primarily smaller and medium credit quality municipal bonds. The existing primary insurers wrote the primary insurance on the education issues which the corporation has reinsured and they may choose to compete for the same investment-grade business.

Connie Lee expects that in this segment of the municipal bond insurance market the existing bond insurers will not have a major presence because of the difficulties in ascertaining the true credit quality of bond issuers. By specializing and developing an expertise in the area of insuring educational bond issues, the corporation hopes to generate business that would not normally interest the full-line insurers. Connie Lee also intends to develop the special contacts and relationships necessary to attract new business.

For municipal bond issuers seeking credit enhancement, there are no close substitutes for bond insurance. Banks and other financial institutions can issue letters of credit, guarantees, and other forms of credit enhancement, but these are generally short- or intermediate-term and do not directly compete with the long-term reinsurance typically offered by Connie Lee or the direct insurance it hopes to offer. However, teaching hospitals have become more active recently in seeking short-term financing to purchase advanced medical equipment.

While the Connie Lee Insurance Company would be precluded from issuing letters of credit under New York insurance law, its parent holding company (which is not an insurance company) was granted authority to issue letters of credit by its authorizing statute, and thus could choose to compete with other financial institutions for this business. A factor in Connie Lee's favor is that, because of the new risk-based capital standards which have been adopted for U.S. and foreign banks, banks are expected to become less competitive in providing credit enhancement due to the increased capital which banks will be required to allocate to support such risks. Although the parent holding company has no plans for issuing letters of credit at this time, should it decide to do so in the future, additional capital would be required aside from the capital invested in the insurance subsidiary. The parent holding company should also receive a credit rating separate from the existing triple A rating for the claims-paying ability of the insurance company.

Connie Lee also faces the risk that Federal or State legislation might be enacted which would have an impact on its competitive position in the industry. As an example, prior to commencing operations, an issue arose over Connie Lee's status for purposes of section 149(b) of the Internal Revenue Code of 1986, as amended. This section of the Code provides, in essence, that a tax-exempt obligation, if guaranteed directly or indirectly by the Federal Government or an instrumentality of the Federal Government, will lose its tax-exempt status for Federal income tax purposes. Because of the investment of Sallie Mae and the Department of Education in Connie Lee, a question was raised as to whether section 149(b) might cause tax-exempt obligations issued by colleges and universities to lose their tax-exempt status if guaranteed by the corporation. The issue has since been resolved in Connie Lee's favor and will not be an obstacle to Connie Lee's providing direct insurance. It should be noted that the President's 1991 Budget proposes various legislative changes to the Medicare program which if enacted, could negatively affect teaching hospitals. These changes are discussed below.

Connie Lee manages the risk of legislative change by attempting to keep abreast of developments in Federal and State laws. Connie Lee is a member of the Association of Financial Guaranty Insurers, an industry group which monitors State and Federal laws and regulations affecting the industry. The corporation's General Counsel is a member of several organizations which are sources of information on legal and legislative changes. Further, Connie Lee has retained outside legal counsel to monitor changes in Federal law which would have an effect on the corporation.

Demand for bond insurance

The overall demand for bond insurance is sensitive to the spread between the yield on uninsured bonds and the yield on insured bonds. As such spreads narrow, the value of bond insurance to bond issuers decreases, and bond issuers tend to reduce their purchases of bond insurance. The minimum premium that Connie Lee could charge while still covering its credit risk and costs (or meet State regulatory standards) might not be low enough to induce some bond issuers to purchase insurance. Pressure of this sort on premiums has been observed when market interest rates on municipal bonds are low. While the corporation has no control over spreads between insured and uninsured bonds, it must nonetheless attempt to manage this risk, either by cutting costs when necessary or by increasing its market share.

Connie Lee's success in generating new business as a municipal bond insurer will be greatly influenced by the strength of demand for bond insurance by educational institutions in the coming years. Demand for bond insurance might weaken for two reasons:

(1) a reduction in the total number and aggregate dollar amount of new bond issues being brought to market; and

(2) a decrease in the amount of insured bonds as a percent of the aggregate amount of bonds issued.

During the last several years, the size of the market for higher education and health care financings has increased significantly. The following table summarizes higher education long-term tax-exempt financing activity which has occurred since 1983.[73]

Table 1

New Issues of Long-Term Public Tax-Exempt Bonds for Academic Facilities
($ in millions)

	Total Issues Par Value	Insured Issues Par Value	Insured Issues as Percentage of Total Par Value
1983	$ 9,350	$ 1,064	11.4%
1984	10,013	2,820	28.2
1985	33,409	10,970	32.8
1986	13,841	2,487	18.0
1987	12,799	3,567	27.9
1988	14,220	4,574	32.2
1989	17,020	5,556	32.6

Source: Connie Lee

Connie Lee believes that there is a large need for additional financial guarantee insurance on obligations issued by educational institutions. This need is due, in part, to the multi-billion dollar demand of such institutions for capital for new and renovated facilities, equipment and instrumentation,[74] as well as to the inability of educational institutions to secure sufficient credit enhancement from existing financial guarantee insurers.[75] According to Connie Lee, the overall financial picture for colleges and universities should be stable over the next five years. Despite projections of a decline in the 18-to-24 year-old population, enrollments generally will remain constant because a greater proportion of high school graduates, along with older part-time students, will enter college.[76] Recent Department of Education projections support Connie Lee's view on college and university enrollments.[77]

While the demand for Connie Lee's insurance would be influenced by the volume of new educational facilities bonds to be issued, the volume of future issues of such bonds will be influenced, in turn, by changes in future enrollments at and the financial health of colleges, universities and teaching hospitals. While the primary effect of a decline in the financial health of such institutions would be to increase Connie Lee's credit risk with respect to bonds which it has already insured, another potential effect of such a decline would be to reduce the growth of Connie Lee's new business. Educational institutions experiencing financial difficulty or declining enrollments might not want to undertake new capital improvement projects, and therefore would issue fewer bonds. On the other hand, institutions which currently do not need bond insurance because of their high credit ratings might begin to seek bond insurance if their credit ratings were to fall.

One potential problem facing teaching hospitals results from the fact that a relatively high percentage of their patients are Medicare beneficiaries. Several changes in the Medicare program which could affect teaching hospitals were proposed in the President's Budget for fiscal year 1991. Under current law, teaching hospitals which serve Medicare beneficiaries receive payments, called indirect medical education adjustments (IMEs), in additional to normal Medicare reimbursements. These IME payments are intended to compensate teaching hospitals for higher costs related to differences in severity of patient illness and the higher cost of care related to training. Several studies have concluded that the IME adjustments have been too high. The President's Budget proposed reducing the adjustment factor to a level based on more scientific analysis.[78]

Conclusions and recommendations

Connie Lee will face greater competition when it becomes a primary insurer. By developing its expertise and contacts in those municipal bond sectors to which it is limited by Federal statute, Connie Lee intends to establish a secure niche for itself in the market for bond insurance. It would be premature to evaluate the corporation's success in this regard.

If the demand for bond insurance declines in the corporation's target sectors, it must either strive to increase its market share, or be prepared to reduce its costs to a level consistent with its income. At this point, a significant reduction in the demand for bond insurance appears to be unlikely.

Analysis of Capital

Overview

Connie Lee is currently capitalized with investments by Sallie Mae and the Department of Education. Connie Lee Insurance Company, a wholly owned subsidiary of Connie Lee, is adequately capitalized to finance its reinsurance business. The Company will need $60-$70 million in additional capital before beginning operation as a primary insurer. There exist State insurance regulations on capital, but S&P's capital requirements are more stringent. The Company will face relatively higher S&P capital requirements because it is limited to insuring only higher education institutions which would be listed below the third highest rating of a nationally recognized SRO.

Equity capital

As of December 31, 1989, Sallie Mae and the Department of Education have invested $72 million in the parent holding company. Connie Lee intends to use a portion of the proceeds from its proposed private placement of common stock to repurchase $10 million of stock held by Sallie Mae.[79] Because of an accumulated deficit of $1.6 million on a GAAP accounting basis, the stockholders' equity of the parent holding company was $70.4 million at the end of 1989 (see Table 2). The assets of the parent holding company consist almost entirely of common stock of its insurance company subsidiary. As of December 31, 1989, the stockholders' equity of the subsidiary was $67.8 million on a GAAP accounting basis. On that same date, the stockholders' equity using statutory accounting methods (also referred to as policyholders' surplus) of the insurance company was $53.3 million (see Table 3). In addition, under certain conditions, Sallie Mae would be required to invest up to $25 million in the parent company if additional capital were needed by the insurance company for its reinsurance activities.

Voting common stock. As of December 31, 1989, Connie Lee's shareholders, reflecting a June 1989 1,000 for 1 stock split, were as shown below.

Table 4

Shareholders of Connie Lee

Shareholder	Number of Shares	Percent
Sallie Mae	5,819,800	75.2%
Department of Education	1,914,800	24.8
	7,734,600	100.0%

Source: Coopers & Lybrand

Table 2
Connie Lee (Holding Company) Capital Structure

($ thousands, year-end)

Condensed Balance Sheet *	1988	1989
Assets		
Bonds	18,773	59,894
Cash and short-term investments	39,464	7,094
Uncollected premiums	699	1,170
Other assets	10,340	16,545
Total assets	69,276	84,703
Liabilities		
Unearned premiums	999	12,033
Payables	415	1,007
Accrued expenses	722	968
Other liabilities	289	338
Total liabilities	2,425	14,346
Stockholders' Equity		
Common stock	72,000	72,000
Retained earnings	(5,149)	(1,643)
Total stockholders' equity	66,851	70,357
Total liabilities and stockholders' equity	69,276	84,703

* Balance sheet reflects GAAP accounting practices.

Source: Report of Coopers & Lybrand on Consolidated Financial Statements of the College Construction Loan Insurance Association.

Table 3
Connie Lee Insurance Company Capital Structure

($ thousands, year-end)

Condensed Balance Sheet *	1988	1989
Assets		
Bonds	18,604	59,801
Cash	2,652	966
Short-term investments	35,169	4,969
Uncollected premiums	999	1,017
Other assets	876	1,517
Total assets	58,300	68,271
Liabilities		
Unearned premiums	999	12,482
Payables	477	1,039
Contingency reserves	50	624
Other liabilities	300	787
Total liabilities	1,826	14,932
Stockholders' Equity		
Common stock	4,500	4,500
Paid-in surplus	56,642	56,642
Retained earnings	(4,668)	(7,803)
Total stockholders' equity	56,474	53,339
Total liabilities and stockholders' equity	58,300	68,271

* Balance sheet reflects statutory accounting practices.

Source: Annual Statements of the Connie Lee Insurance Company.

Nonvoting common stock. Nonvoting common stock of the parent holding company has been authorized by its Board of Directors. However, the terms have not yet been specified, and none has been issued.

Preferred stock. Preferred stock of the parent holding company has been authorized by its Board of Directors. However, the terms have not yet been specified, and none has been issued.

Dividend policy. Connie Lee's ability to declare dividends is dependent on the ability of Connie Lee Insurance Company to declare dividends to Connie Lee. Under Wisconsin insurance law, Connie Lee Insurance Company may pay a dividend subject to the following limitations. Dividends may be declared and paid only out of earned surplus. The sum of dividends distributed during the preceding 12-month period and the dividends to be distributed may not exceed the greater of 10 percent of the policyholders' surplus at the preceding December 31, or 100 percent of net investment income for the 12-month period ending on the preceding December 31, unless 30 days notice is given to the Wisconsin Insurance Commissioner who either approves within such period, or does not disapprove, a greater dividend payment. The Company had not adopted a formal dividend policy as of December 31, 1989 and did not pay dividends during 1988 or 1989.

Incentive stock option plan. The Board of Directors has authorized the granting to Connie Lee and Connie Lee Insurance Company officers of up to 700,000 options to purchase shares of Connie Lee common stock. At December 31, 1989 and 1988, grants of 310,000 options and 335,000 options, respectively, were reserved for award to officers. The average option price was $8.74 at year-end 1989 and $8.73 at year-end 1988. During 1989, 25,000 options were granted and 50,000 expired. The options vest over a five-year period following the grant. At December 31, 1989, 47,800 options were exercisable.[80]

Subordinated debenture

Connie Lee and Connie Lee Insurance Company have no debt outstanding and it is unlikely that the Company will incur debt in the future. Insurance regulators and rating agencies prefer the use of equity, as opposed to debt, so there will not be other claims on corporate assets which could take precedence over those of insured policyholders.

Loan loss reserves

Connie Lee Insurance Company is required to establish a contingency reserve, which consists of the greater of fifty cents of each earned premium dollar or 5 percent of total unearned premiums. New York insurance law, which bases reserves on a weighted average percentage of total principal insured, may require the Company to establish a larger contingency reserve. All financial guarantee insurance corporations, including Connie Lee Insurance Company, have until May 1992 to comply with this regulation. The contingency reserve differs from an anticipated loss reserve because unlike other forms of insurance, or bank loans, municipal bond insurance is underwritten to a "no loss" standard.[81] To be conservative, State insurance laws require the establishment of a contingency reserve to protect against a "worst case" default scenario. If a default were to occur, a loss reserve equal to the present value of the future stream of payments on the defaulted issue would be established, from which regularly scheduled payments would be made on the defaulted issue.[82]

Capital adequacy

The primary risk facing Connie Lee Insurance Company is the risk that issues in its insured bond portfolio will go into default. Although bond insurers can expect minimal net losses in a normal operating environment, under adverse economic conditions, a large number of defaults are possible. The Company must maintain a level of capital which is adequate to support this risk.

Connie Lee Insurance Company must meet capital standards set by S&P in order to maintain its triple A rating as a bond reinsurer and qualify for a triple A rating as a primary bond insurer. S&P has not established a maximum exposure/statutory capital ratio, but applies a capital allocation model to determine the minimum capital necessary for a bond insurer to be able to sustain heavy losses under a "depression scenario." The model or stress test was designed to reflect:

(1) the relative riskiness of various types of issues being insured;

(2) the likely duration of default in any sector; and

(3) the size of subsequent losses, all of which are expected to differ by issue type.

S&P has divided the municipal bond market into over 20 sectors, each of which is assigned a capital "charge", which is the amount of capital needed to back insurance of bonds in that sector, calculated on a percentage basis. The capital charges for bonds in the education sectors range from a low of 9 percent for general obligations of public colleges and universities to a high of 35 percent for auxiliary enterprises of private colleges and universities. A 20-30 percent capital charge is assigned to teaching hospital issues. The capital charge guidelines assume an S&P rating of at least triple B for each bond insured. If an issue is below investment-grade, charges are increased by 50-200 percent.[83]

In determining capital adequacy, the appropriate municipal sector charge is applied to the dollar amount of insured average annual debt service within the particular municipal sector. The sum of these charges is allocated over a four-year depression scenario. A triple A rated insurer will have sufficient capital to absorb the cumulative losses and remain solvent from a statutory accounting basis.[84] In the case of Connie Lee Insurance Company, because of the narrow focus of its business, S&P will require that it pass the stress test with a higher capital level than would be required for other bond insurers. The amount of capital sufficiency will be sensitive to the rating S&P assigns to each issue. S&P does not consider Connie Lee's Federal ties to be strong enough to justify relaxing its capital requirements.[85]

Connie Lee Insurance Company's aggregate exposure under all financial guarantees in force as of December 31, 1989, was $1,661 million. On that date statutory capital, which is the sum of policyholders' surplus, or $53.34 million, and contingency reserves, or $.62 million, was $53.96 million. S&P is satisfied with this amount of capital, but has stated that the availability of the $25 million capital commitment from Sallie Mae was a significant factor in the determination of capital adequacy.[86] This commitment will be terminated when Connie Lee Insurance Company begins operation as a primary insurer.

The Company must also meet California insurance law which requires municipal bond insurers and reinsurers to operate with an exposure/statutory capital ratio of less than 200:1. Existing municipal bond insurers operate with exposure/statutory capital ratios ranging from 100 to 200:1. S&P expects that as a primary insurer, Connie Lee Insurance Company will be restricted by its capital requirements to a ratio closer to the low end of this range.

The Company has been in the reinsurance business for only a short period of time and as of the end of 1989 was operating with a 30.8:1 exposure/capital ratio. The Company is in a position to adequately support an expansion of its book of business to three to five times its current level.

Connie Lee Insurance Company intends to begin operations as a primary municipal bond insurer sometime in 1990. For start-up full-line bond insurers to receive a triple A rating, S&P has established a minimum capital requirement of $150 million in primary equity capital. S&P, however, will allow the Company to be eligible for a triple A rating with less start-up capital (approximately $100 million in statutory capital) because it is not a full-line insurer and therefore, will write a lesser aggregate volume of insurance than those companies which insure all sectors of the municipal bond market. A private placement of common stock is planned in June 1990 by the parent holding company to raise the necessary additional $60-$70 million in capital. Connie Lee's officers decided against a public offering because they believe individual investors would be dissatisfied with the low return on equity that a typical bond insurer earns in its early years of operation.[87]

Capital growth

Once Connie Lee Insurance Company's exposure has grown to the maximum allowed by S&P or State regulators, its growth of exposure will be limited by the amount of capital accumulated by the Company. Additional capital can be raised externally by issuing new equity, or generated internally through retained earnings. Any defaults would, of course, reduce the amount of available capital. The Company's income is derived from two sources: the premiums it collects for the bond insurance that it provides and the income generated from its investment portfolio. Assuming that the Company follows a prudent investment policy, its primary challenge will be to maximize premium revenues while adhering to its stated standard of underwriting only investment-grade issues. Overall, its insured bond portfolio will be riskier than that of other bond insurers because of the lack of diversification across market sectors and the specialization in medium credit quality bonds. While the premiums collected for insuring medium credit quality bond issues will be greater than the premiums collected for insuring higher grade issues, S&P's capital requirements will also be higher, which will limit the Company's ability to leverage its capital.

Conclusions

Connie Lee Insurance Company must meet State regulations with regard to contingency reserves, minimum capital, and a maximum exposure, but the most stringent requirements are the stress test which S&P requires it to pass and the start-up capital that it must have to qualify for a triple A claims-paying ability rating. As a reinsurer, the Company has adequate capital, but before receiving a triple A rating as a primary insurer, it must raise $60-$70 million in additional capital.

The Company can expect S&P to require it to pass the stress test with higher capital sufficiency than would be required of other bond insurers because of the narrow focus of the Company's business and the restriction that it insure only bonds of medium credit quality. This will limit the Company's ability to leverage its capital.

Quality and Timeliness of Information

Overview

Connie Lee provides reports and information to Congress and the President, State insurance regulatory agencies, and S&P. These reports adequately disclose Connie Lee's financial and operational statistics in a timely manner, but do not provide sufficient information concerning the overall risks posed by the corporation's operations.

Analysis

Connie Lee is required by Federal statute to submit annual reports on its operations and activities to Congress and the President. These reports must include the corporation's financial statements and the opinion with respect to such statements prepared by its independent public accountant, as well as any report prepared by the accountant on the required audit of Connie Lee's books of account. Connie Lee is also required to submit financial statements to the Office of Management and Budget for inclusion in the Federal Budget.

In addition, the corporation must submit statutory financial statements which meet various State insurance regulatory agency requirements to such agencies on an annual, and where required, on a quarterly basis.

S&P intends to review its rating of Connie Lee's claims-paying ability on an annual basis and will be requiring Connie Lee to submit information on the bonds which it has insured and on its operations. S&P currently rates all the major financial guarantors, and its judgement is well respected by participants in the municipal bond market.

Coopers & Lybrand audits and prepares Connie Lee's annual financial statements in accordance with generally accepted accounting principles. The audit report is, however, not widely available. Thus, the general public, including the holders of bonds insured by Connie Lee, usually rely on the approval by State regulators and the S&P triple A rating for assurance of Connie Lee's safety and soundness.

The reports which Connie Lee produces adequately disclose its financial and operational statistics on a timely basis. Connie Lee's 1988 report to Congress and the President dealt primarily with legislative and business history without specifically addressing the risks posed by Connie Lee's activities. As recommended earlier, Coopers & Lybrand, in conjunction with its annual audit of Connie Lee, should be asked to review the written underwriting and surveillance policies and procedures which have been proposed and include its findings concerning these documents in its audit report on Connie Lee, which is provided to the Federal Government.

Although it is too early to determine the extent to which Connie Lee will enter the direct insurance market, disclosure of the new risks and management's plan to deal effectively with the resulting higher exposure should be provided to the Federal Government.

Conclusions and recommendations

The reports which Connie Lee provides to the President, State insurance regulatory agencies, and S&P adequately disclose Connie Lee's financial and operational statistics in a timely manner. However, they do not provide sufficient information concerning the overall risks posed by the corporation's operations.

Connie Lee's public accounting firm should be asked to review the corporation's underwriting and surveillance policies and procedures and include its findings in its audit report on the corporation. Moreover, Connie Lee should be required to disclose to the Federal Government the new risks posed by its proposed entry into the primary insurance market and its management plan to deal effectively with the resulting higher exposure.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Connie Lee was incorporated in February 1987 and completed its first full year of operation as a reinsurer of academic facilities bonds in December 1989. In keeping with its Congressional mandate, Connie Lee will enter the primary insurance business sometime in 1990. In order to do so, the corporation will need to raise approximately $60-70 million in additional capital. Connie Lee intends to raise this capital through a private placement, which is tentatively scheduled for June 1990 and anticipates that there will be no problems in raising the capital.

During its past year as a reinsurer, Connie Lee has managed its credit, interest rate, management and operations, and business risks well and appears to be a financially safe and sound corporation. Thus, Connie Lee appears to have utilized well the start-up capital provided by the Federal Government. The Secretary of Education should sell his $19.1 million holdings of Connie Lee stock in February 1992 when he is authorized to do so. As provided in Connie Lee's authorizing statute, Sallie Mae would be given the right of first refusal on the sale of such stock. Until the Secretary's stock holdings are sold, Connie Lee's receipts and outlays should be included in the Federal Budget in accordance with existing budget scoring rules applicable to Government-sponsored enterprises.

As it moves into the primary insurance business and takes on higher exposure, Connie Lee should establish a more formalized system of underwriting procedures in order to ensure that its credit analysts assess credit risk in accordance with its Board-approved underwriting criteria. In this regard, the corporation's current subjective credit rating system should be quantified and adherence to the underwriting criteria which it has established should be documented via an internal audit function. Connie Lee should also establish an information system to track the higher exposure which it will take on as a primary insurer. Moreover, internal deficiency reports concerning adherence to the corporation's policies and procedures should be required.

Despite the Federal Government's investment in Connie Lee, it has no effective oversight over the corporation's activities. The Federal Government's appointment of four directors to Connie Lee's Board and the annual reporting requirements which it has placed on Connie Lee are the only areas where the Government has a degree of oversight responsibility.

Given the Federal Government's special relationship to Connie Lee, the Government needs to monitor more closely than it does now the risks which Connie Lee is facing in its operations. The reports currently provided to Congress and the President should be expanded to include a clear assessment of the corporation's plans for future business activities and the associated risks and capital needs. In this regard, Connie Lee's audit firm should be asked to review the corporation's underwriting and surveillance policies and procedures and include its findings in its audit report on Connie Lee.

ENDNOTES

1. P.L. 99-498, enacted October 17, 1986, (20 U.S.C. 1132f *et seq*.).

2. U.S., Congress, House, Committee on Education and Labor, *Higher Education Amendments of 1985*, 99th Congress, 1st sess., 1985, H. Rept. 99-383 to accompany H.R. 3700, pp. 71-72.

3. *Ibid*., p. 72.

4. *Ibid*., p. 73.

5. Oliver R. Sockwell, Statement before the Subcommittee on Oversight of the House Ways and Means Committee on Government-Sponsored Enterprises, September 28, 1989, pp. 2-3.

6. P.L. 99-498.

7. Sockwell, *op*. *cit*., p. 16.

8. Report on Connie Lee's operations provided to the U.S. Treasury Department on January 8, 1990, p. 26.

9. Letter from Sallie Mae General Counsel Ronald Hunt to Jill K. Ouseley, March 16, 1990, p. 12.

10. In this regard, Sallie Mae has provided considerable non-financial support to Connie Lee, such as executive, staff, and facilities resources to Connie Lee.

11. Statutory capital is the sum of stockholders' equity and contingency reserves as computed under statutory methods of accounting.

12. Interview with Connie Lee management, May 17, 1990.

13. Sockwell, *op*. *cit*., p. 17.

14. *Ibid*., p. 5.

15. Interview with Connie Lee management, May 17, 1990.

16. P.L. 99-498.

17. Report on Connie Lee's operations, *op*. *cit*., pp. 2-3.

18. Municipal Bond Investors Assurance, Inc. (MBIA), AMBAC Indemnity Corporation, Financial Guarantee Insurance Company (FGIC), Bond Investors Guaranty (BIG) and Capital Guaranty

Insurance Company were the primary insurers in 1989. It should be noted that BIG was purchased by MBIA in January 1990, and Financial Security Assurance, Inc., has recently announced plans to enter the municipal bond insurance industry.

19. Sockwell, op. cit., p. 4.

20. Interview with Connie Lee management, January 11, 1990.

21. Annual Statement for the Year Ended December 31, 1989 of the Conditions and Affairs of the Connie Lee Insurance Company, p. 18.

22. Interview with Connie Lee management, January 11, 1990.

23. Sockwell, op. cit., p. 5.

24. Report on Connie Lee's operations, op. cit., p. 39.

25. Interview with Connie Lee management, January 11, 1990.

26. Report on Connie Lee's operations, op. cit., p. 50.

27. Ibid., pp. 73-74.

28. U.S., Congress, House, op. cit., p. 74.

29. Section 149(b) of the Internal Revenue Code of 1986, as amended, denies tax exemption to obligations which are directly or indirectly federally guaranteed.

30. Letter to participants in the College Loan Insurance Association incorporators meeting from Oliver Sockwell, February 4, 1987, p. 8.

31. Conference call with Standard and Poor's Corporation, March 6, 1990.

32. Standard and Poor's Corporation, Bond Insurance, "Rating Analysis," Connie Lee Insurance Co. Rating 'AAA', p. 2.

33. Act of March 9, 1945, c. 20, 59 Stat. 33.

34. U.S., Congress, House, Failed Promises: Insurance Company Insolvencies, Subcommittee on Oversight and Investigations of the Committee on Energy and Commerce, 101st Congress, 2nd sess., 1990, Committee Print 101-P.

35. Report on Connie Lee's operations, op. cit., pp. 9-16.

36. Telephone conversation with Wisconsin Office of the Commissioner of Insurance, March 30, 1990.

37. Report on Connie Lee's operations, op. cit., p. 10.

38. Letter dated January 30, 1990 from Mr. Peter Medley, Bureau of Financial Examinations of the Office of the Commissioner of Insurance of the State of Wisconsin, to Ms. Terry Boyer, Surety Bond Branch, Financial Management Service, U.S. Treasury Department.

39. Telephone conversation with Mr. Peter Medley on March 28, 1990.

40. The officers of Connie Lee (the holding company) serve as officers of the Connie Lee Insurance Company. Moreover, Connie Lee's Board of Directors, plus two additional directors, comprise the Company's Board.

41. Report on Connie Lee's operations, op. cit., p. 11.

42. In the case of Connie Lee, S&P will require it to pass the stress test with higher capital sufficiency because of the narrow focus of its business and the statutory requirement to insure only bonds of medium credit quality.

43. Report on Connie Lee's operations, op. cit., pp. 20-22.

44. Letter from Education Deputy Under Secretary Thomas E. Anfinson to Treasury Under Secretary Robert R. Glauber, February 1, 1990, p. 3.

45. P.L. 99-498.

46. Budget of the United States Government, Fiscal Year 1991, Section Two, Part V(D), "Government-Sponsored Enterprises," p. A-1213.

47. Connie Lee operates its insurance business through its subsidiary, Connie Lee Insurance Company. Throughout the remainder of this appendix, the term "Connie Lee" will refer to Connie Lee Insurance Company, rather than the holding company, unless otherwise noted.

48. The historical default rate of bonds issued by hospitals and educational institutions is very low. However, S&P requires a higher than average amount of capital to back up insurance of bonds issued by hospitals and private educational institutions because it anticipates a higher rate of default under adverse economic conditions and that recovery in the event of a default will be difficult.

49. Interview with Connie Lee management, January 11, 1990.

50. Interview with Connie Lee management, March 6, 1990.

51. Conference call with Connie Lee, March 28, 1990.

52. Interview with Connie Lee management, May 17, 1990.

53. "Inadequate Capital, Low Premium Rates Endanger Insurers, FGIC's Friedman Says," The Bond Buyer, February 12, 1990.

54. Interview with Connie Lee management, March 6, 1990.

55. Report on Connie Lee's operations, op cit., pp. 50-51.

56. Standard and Poor's Corporation, OVERVIEW: S&P's Insurer Claims-Paying Ability Ratings, p. 15.

57. Interview with Connie Lee management, January 11, 1990.

58. Ibid.

59. Conference call with Standard and Poor's Corporation, March 6, 1990.

60. Report on Connie Lee's operations, op. cit., p. 48.

61. Ibid., pp. 73-75.

62. Conference call with Connie Lee, March 28, 1990.

63. Conference call with Standard and Poor's Corporation, March 6, 1990.

64. Interview with Connie Lee management, February 20, 1990.

65. Interview with Connie Lee management, May 17, 1990.

66. Connie Lee 1989 Preliminary Financial Forecast, Comparison of Actual to Plan, Board of Directors meeting, December 13, 1989. This illustrates the difficulty of forecasting business volume in a start-up enterprise.

67. Interview with Connie Lee management, February 20, 1990.

68. Ibid. The fact that details of the firm's business strategy are not circulated to employees below the level of senior vice president is evidence of a tightly-held policy making environment.

69. These five standing committees are: Finance, Audit, Underwriting, Personnel, and Executive.

70. Interview with Connie Lee management, February 20, 1990. The examples given were AMBAC and FGIC.

71. Ibid.

72. Financial guarantee insurance companies generally report low returns on equity during the first several years of operation primarily because, under generally accepted accounting principles, all underwriting expenses are reported in the period in which they are incurred, while premiums received are included in income on a pro rata basis over the life of the bond insured.

73. Connie Lee prepared the table using data supplied by Securities Data Company, The Bond Buyer. Insured volume represents only that portion of an issue which has received triple A insurance. Volume includes colleges, universities, and teaching hospitals as defined by Connie Lee.

74. In a recent Coopers & Lybrand study titled "The Decaying American Campus, a Ticking Time Bond," it was estimated that $60 to $70 billion will be required for new and renovated facilities and equipment among the Nation's colleges, universities, and teaching hospitals over the next ten years.

75. Report on Connie Lee's operations, op. cit., pp. 32-33.

76. Ibid., p. 52.

77. U.S. Department of Education, Projections of Education Statistics to 2000, National Center for Education Statistics, NCES 89-648, December 1989, pp. 23-25.

78. Budget of the United States Government, Fiscal Year 1991, p. 190.

79. Interview with Connie Lee management, May 17, 1990.

80. Connie Lee financial statements for the year ending December 31, 1989.

81. Generally, insurance companies establish loss reserves to cover actuarially expected future losses. Municipal bond insurance companies primarily insure investment grade bonds, which are not expected to default under normal economic conditions. This is commonly referred to as a "no loss" standard.

82. New York Insurance Law, Article 69 - Financial Guaranty Insurance Corporations.

83. Conference call with Standard and Poor's Corporation, March 6, 1990.

84. Standard and Poor's Corporation, OVERVIEW: S&P's Insurer Claims-Paying Ability Ratings, pp. 15-16.

85. Conference call with Standard and Poor's Corporation, March 6, 1990.

86. Standard and Poor's Corporation, Bond Insurance, op. cit., p. 2.

87. Interview with Connie Lee management, February 28, 1990.

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